

## **2009 BCC survey NO. 2**

### **TRANSBOUNDARY SURVEY BETWEEN NAMIBIA AND SOUTH AFRICA WITH FOCUS ON THE JUVENILE STAGE OF DEEP WATER HAKE**

**Cruise report No 2/2009**

**21 February – 5 March 2009**

**By**

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## 1 Introduction

Given the importance of *Merluccius paradoxus* for the South-African and Namibian fisheries surprisingly little is known about the early life stages of the species. There are anecdotal information on spawning grounds (Crawford *et al.*, 1987; Hutchings *et al.*, 2002) and some information on peak spawning periods is also gathered from the fisheries (B. Rose, Irvin and Johnson, Cape Town, unpublished data and pers. comm.). Drifts route of eggs and larvae was studied by Stenevik *et al.* (2008) and it is well established through surveys that the area between Hondeklip Bay and Orange River holds large amount of juvenile fish and this is also the only area where small *M. paradoxus* less than 5 cm is encountered in the bottom trawl (Strømme *et al.*, 2005). The survey carried out in February-March 2005 confirmed that the area north of Hondeklip Bay held the smallest fish, and as it grew bigger it migrated 'omnidirectional' from this site. That the area between Hondeklip Bay and Orange River forms the main nursery area for the *M. paradoxus* seems quite evident. However, the pelagic stage from early larvae until they show up in the bottom trawl is poorly studied and the objective if the survey was to put more light on this phase of the life cycle.

## 2 Material and Methods

### 2.1 Registration of weather conditions

The underway weather data aboard Dr. Fridtjof Nansen are logged with the Aanderaa Weather Station unit fitted with the following sensors:

Sensor type	Measurement units
Air temperature	Degrees °C
Wind speed	M/s
Solar radiation	W/m <sup>2</sup>
Wind direction	Degrees re. the magnetic N. Pole
Sea surface temperature	Degrees °C

All sensors but Sea surface temperature (SST) are mounted on a mast positioned midships, at about 20 meters above the sea level. The SST sensor is located at the intake of the water

for cooling the engine and its readings are representative to a water layer at about 5 meters below the sea level.

The weather station data were logged continuously throughout the survey. The results presented in this report are based on a standard output from the logging system comprising one nautical mile averages along the ship's track.

## 2.2 Hydrography

The data on temperature, salinity and oxygen were collected with a CTD *Seabird 9 plus* probe between the surface and 10 meters off the bottom. CTDs were made at each station. In addition, water bottle samples for oxygen and salinity calibrations were taken at most CTD stations.

The salinity samples were analysed with the Guildline Portasal salinometer unit. The laboratory conditions onboard are suitable to detect deviations between the CTD and *in situ* samples at a level of 0.005 of salinity units. Since no deviations reaching or exceeding this range were detected, the salinity values based on the factory calibration of the conductivity sensor are used throughout this report.

The samples for dissolved oxygen were titrated within 12 hours of sample collection, using the standard Winkler method.

## 2.3 Trawl sampling

The small 'Åkrahamn' pelagic trawl which has 10-12 m vertical opening under normal operation was used during the survey and was connected with the Multisampler. The multisampler is advantageous because it has three cod-ends that can be opened and closed at any depth. It can therefore take three separate discrete samples in each haul. Each net was typically open for 10 min during trawling. The mesh size in the cod-ends was 12 mm.

The bottom trawl has a 31 m headline and a 47 m footrope fitted with a 12" rubber bobbins gear. The codend has 20 mm meshes, and has an inner net with 10 mm mesh size. The vertical opening is about 5.5 m. The distance between the wing tips is about 18 m during towing. The sweeps are 40 m long. The trawl doors are 'Thyborøen' combi, 8 m<sup>2</sup> and weigh 2000 kg. The door spreading is about 45 m when using restraining rope. Trawling was

conducted for species identification only and no restraining rope was therefore used during the survey. Typical trawl time was 10-15 min.

The SCANMAR system was used during all trawl hauls. This equipment consists of sensors, a hydrophone, a receiver, a display unit and a battery charger. Communication between sensors and ship is based on acoustic transmission. The doors are fitted with sensors to provide information on their distance and a height sensor is fitted on the bottom trawl to measure the trawl opening and provide information on clearance and bottom contact.

The pelagic trawls are equipped with a trawl eye that provides information about the trawl opening and the distance of the footrope to the bottom. A pressure sensor is used to show the depth on the headline.

#### 2.4 Juvenile sampling with Methot

The Methot frame trawl has a mesh size of the inner nets is 7 mm with a cod-end of 1mm mesh size. The Methot sampler was deployed from the stern gate using a 12 mm cable on one of the trawl net winches. The Methot sampler was only used during night time due to well known problems with avoidance when using the sampler during daytime. A Scanmar depth sensor was mounted on top of the frame, and depth was monitored on the bridge during tows. The sampler was towed in a double oblique haul from the surface to 10m above bottom.

#### 2.5 Repeat station

After searching for a while, relatively high numbers of juveniles were found close to the 200 m isobaths at 30°06.9S, 16°001.0E and the first Multisampler haul was conducted on 1<sup>st</sup> March 23:00 local time. Relatively high numbers of *M. paradoxus* were caught in the first pelagic trawl and the vessel stayed in the area with the following sampling plan:

- Station at the same position every 3 hour

- CTD on every station

- Multisampler on every station

- Bottom trawl

  - Once during nighttime (02:00-04:00)

  - Twice during daytime (08:00-12:00 and 15:00-18:00)

- Methot once during night (21:00-03:00)

Due to the problems experienced with the trawl door winch some of the hauls had to be cancelled and during the repeat station, 7 pelagic hauls with Multisampler, two Methot hauls and one bottom trawl were conducted.

### 3 Narrative

The scientific staff consisted of:

From MCM, South Africa:

Marek Lipinski (teamleader), Sobahle Somhlaba

Interns, South Africa:

Garth Walters, Jessica Escobar, Brendon Lee, Laurel Abels, Margit Wilhelm, Josafat K. Hiwana

From NatMIRC, Namibia

Kondja Amutenya, Matthew Hangome

From IMR, Norway:

Erling Kåre Stenevik (cruise leader), Diana Zaera, Jan Frode Wilhelmsen, Terje Hovland

The vessel departed Walvis Bay 21 February at 12:00 and started steaming southward towards the Orange Bank. Due to strong southerly winds (strong gale in periods) the steaming speed was reduced. Arrived at the first station off Panter Head (27°56 S) on 22 February at 11:00 and started station work with CTD and pelagic trawl with Multisampler mounted in order to get three depth discrete samples from each station. Pelagic trawls were conducted on-station during daytime and the sampling depths of the three nets were selected in accordance with hydroacoustic registrations. When there were no significant hydroacoustic recordings, the first net was towed close to the bottom, the second net in an oblique haul towards ca 25m depth and the upper net at about 25 m depth. During nighttime, Methot net was used on-station in a double oblique haul between the surface and ca 10 m above the bottom. Stations were positioned every 15 nm on transects perpendicular to the coast with 15 nm between transects. The survey covered the shelf and upper slope between 100m and 300m bottom depth (figure 1).

It was decided to spend some time on investigating the diel vertical migration pattern of juvenile *M. paradoxus* in an area where sufficient concentrations of the juveniles were found. After searching for a while, relatively high numbers of juveniles were found close to the 200m isobaths at 30°06.9S, 16°001E and it was decided to do a repeat station there. The

first Multisampler haul was conducted on 1<sup>st</sup> March at 23:00 local time (St 80). Experienced some problems with the counter sensor on the port trawl door winch and some of the hauls on the repeat station had to be cancelled. On 3<sup>rd</sup> March at 08:30 station work on transects was resumed. The station work was terminated on 4<sup>th</sup> March at 07:00 and the vessel started steaming towards Cape Town where it docked on 5<sup>th</sup> March at 11:00.

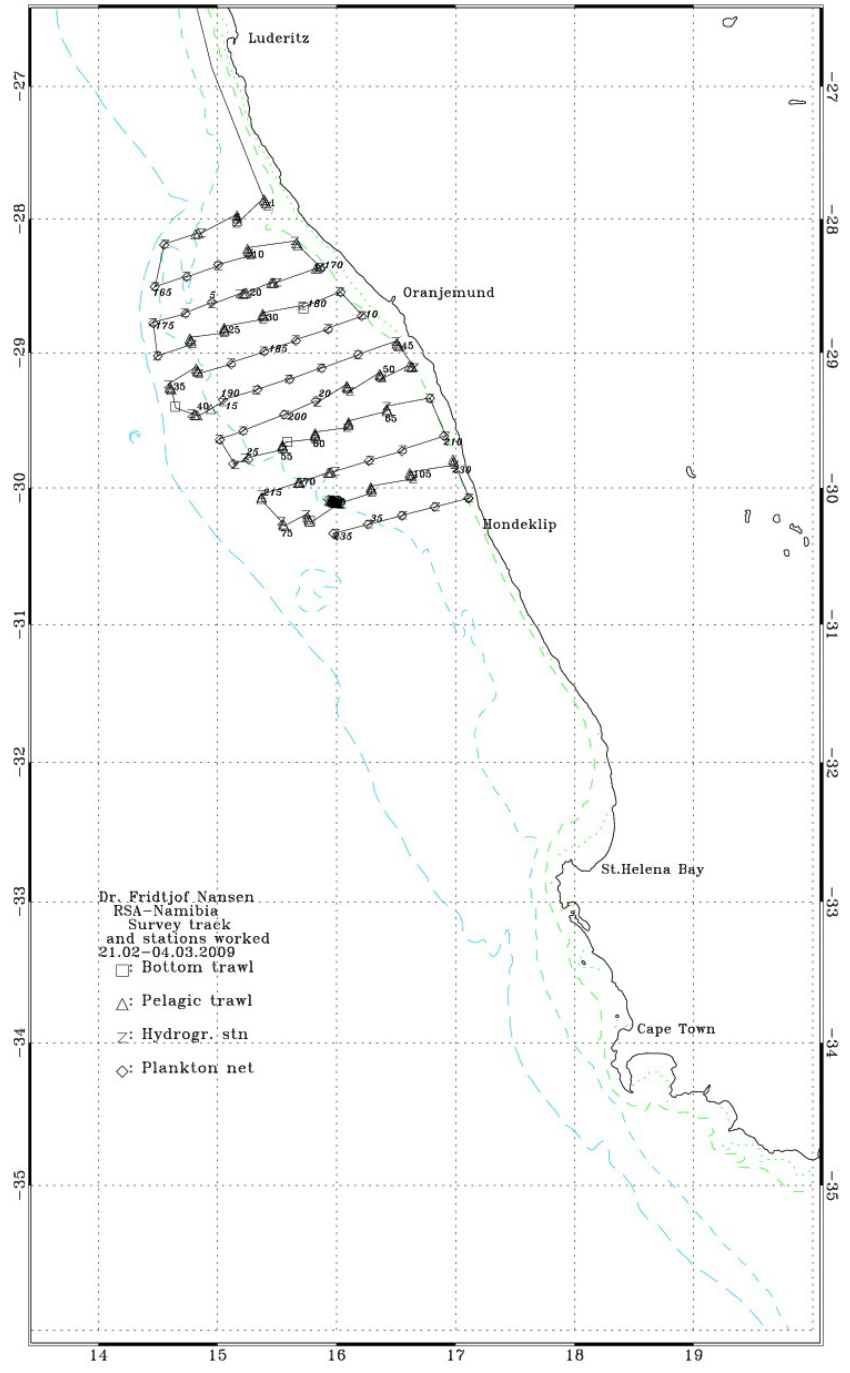


Figure 1. Course track and stations during the survey.

## 4 Results

### 4.1 Wind

Except for during the steaming from Walvis Bay to the first station, the wind conditions were generally favourable during the survey (figure 2) and stations could be conducted throughout the survey period without interruptions due to rough weather.

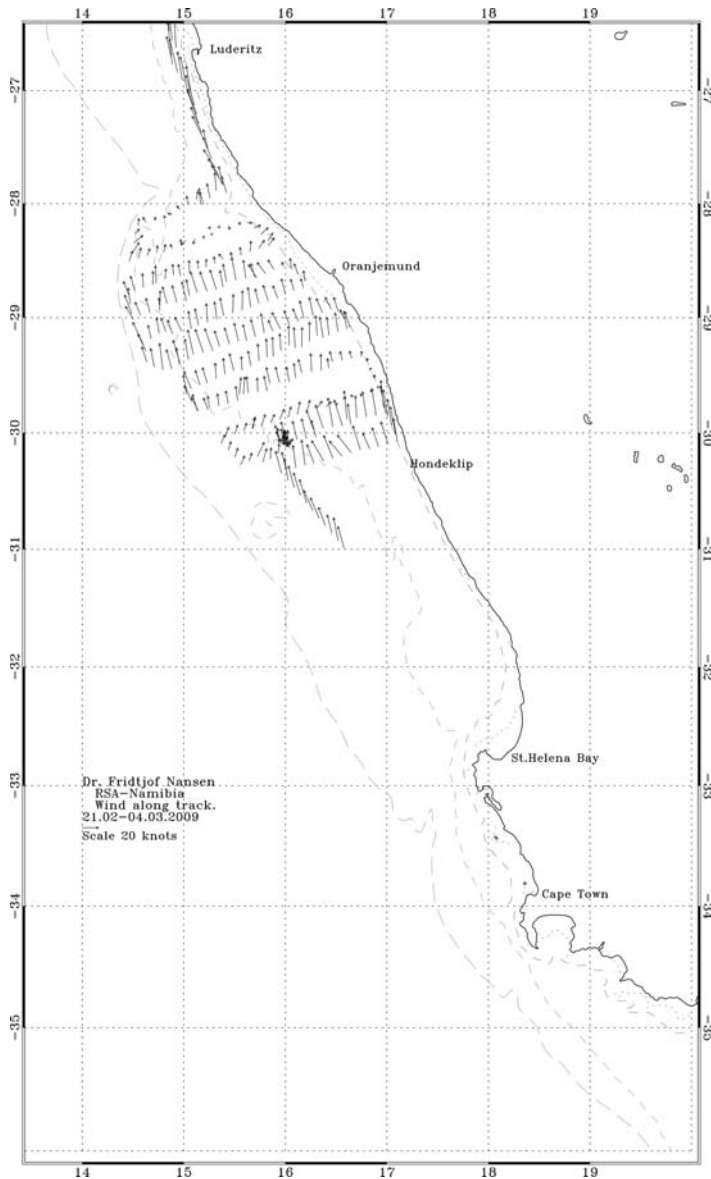


Figure 2. Wind along track



## 4.2 Hydrography

Figure 3 shows the surface temperature in the survey area, while figures 4-14 shows vertical sections of temperature, salinity and oxygen at the 11 cross shelf sections.

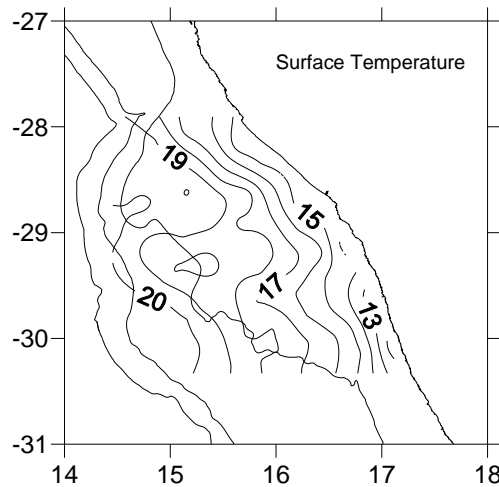


Figure 3. SST along track from thermosalinograph.

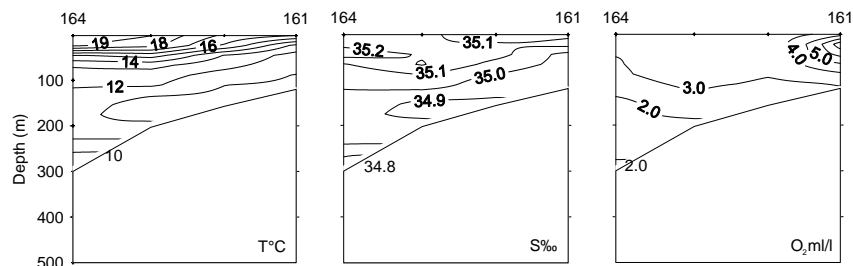


Figure 4 Vertical sections of temperature, salinity and oxygen on the oceanographic S1 transect.

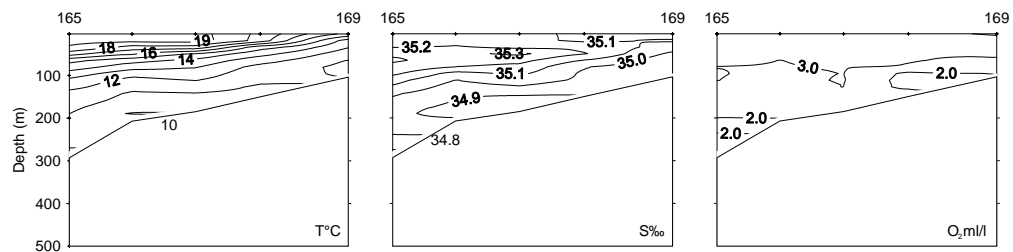


Figure 5 Vertical sections of temperature, salinity and oxygen on the oceanographic S2 transect.

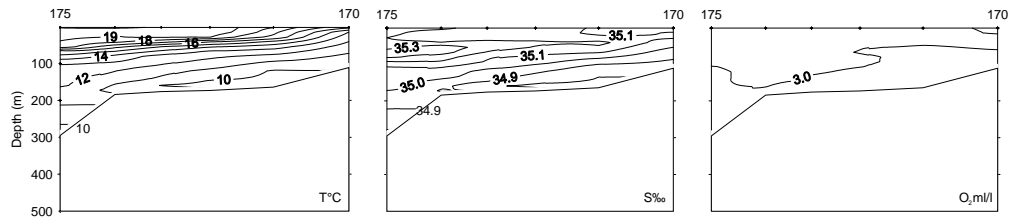


Figure 6 Vertical sections of temperature, salinity and oxygen on the oceanographic S3 transect.

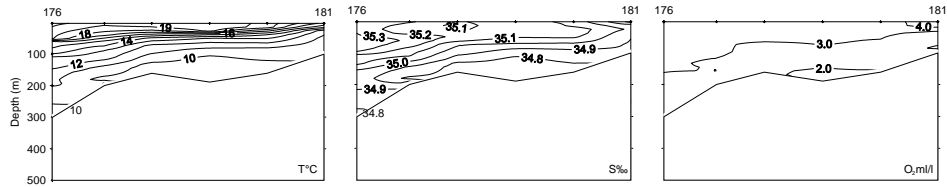


Figure 7 Vertical sections of temperature, salinity and oxygen on the oceanographic S4 transect.

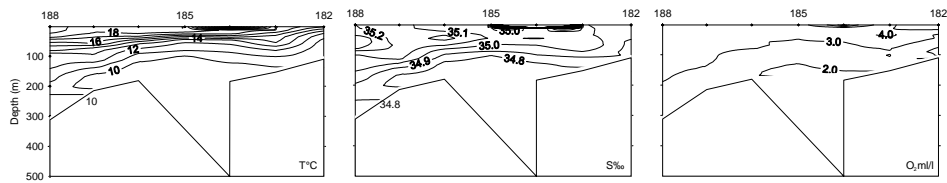


Figure 8 Vertical sections of temperature, salinity and oxygen on the oceanographic S5 transect.

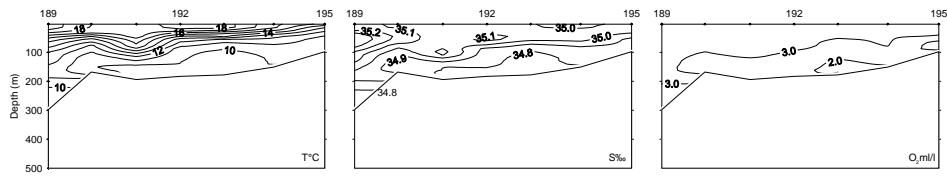


Figure 9 Vertical sections of temperature, salinity and oxygen on the oceanographic S6 transect.

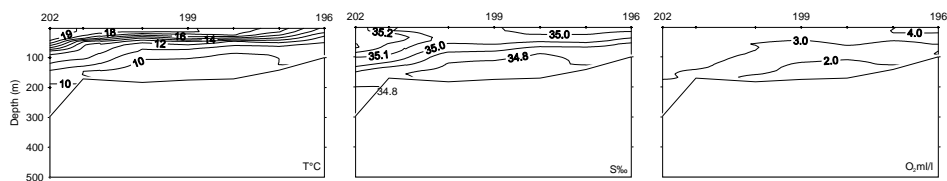


Figure 10 Vertical sections of temperature, salinity and oxygen on the oceanographic S7 transect.

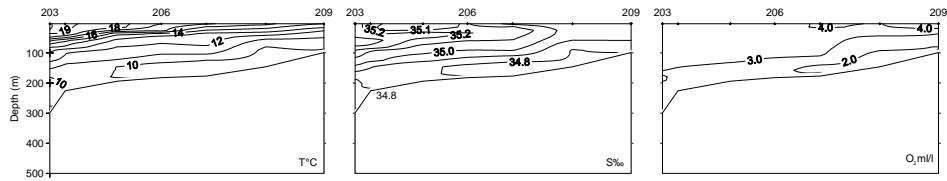


Figure 11 Vertical sections of temperature, salinity and oxygen on the oceanographic S8 transect.

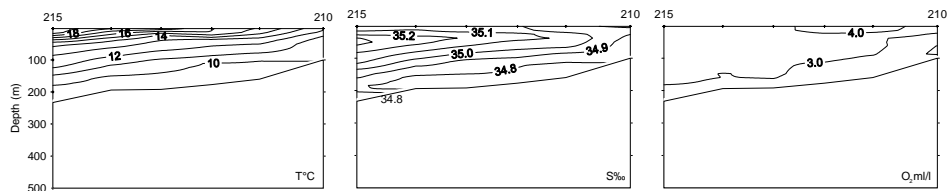


Figure 12 Vertical sections of temperature, salinity and oxygen on the oceanographic S9 transect.

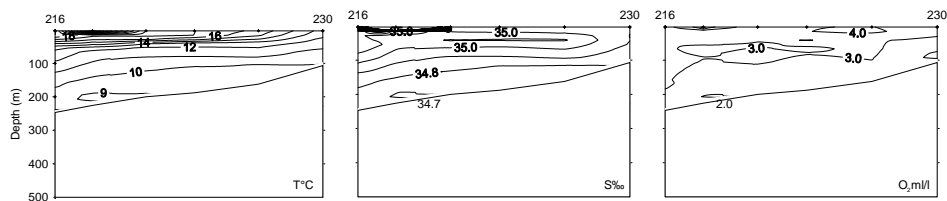


Figure 13 Vertical sections of temperature, salinity and oxygen on the oceanographic S10 transect

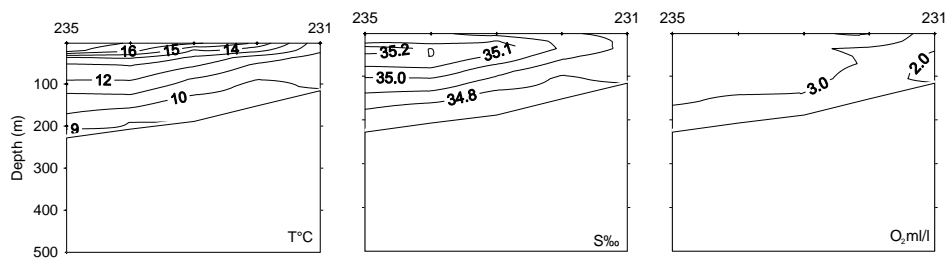


Figure 14 Vertical sections of temperature, salinity and oxygen on the oceanographic S11 transect

### 4.3 Biology

The sampling was mostly done with Methot net during night time and pelagic trawl during daytime to sample the pelagic stage of *M. paradoxus*. Only very few juveniles were found

pelagically except for at the repeat station, and they were all found between Orange River and Hondeklip Bay (figure 15). No juveniles smaller than 5 cm was found during the survey. In the area where the repeat station was conducted, relatively high concentrations of 6-20 cm juveniles were found. The results from the repeat station (figure 16) showed that these juveniles performed vertical migration by being close to bottom during daytime and lifting up from the bottom during night time. There were differences in migration between size classes. Overall, the smaller juveniles (7-13 cm) moved close to the surface during night time while the larger juveniles stayed in the deeper layers (figure 17). Average size of juveniles ranged from 12.9 cm to 16.0 cm, from 8.8 mm to 12.3 cm and from 8.5 cm to 9.7 cm in the near-bottom, mid-water and near-surface hauls, respectively. No juveniles were caught in the pelagic trawl during daytime indicating that even the small juveniles were settled to the bottom during daylight hours.

#### 4.4 Feeding

In order to analyse feeding activity, 24 juvenile *M. paradoxus* from the first pelagic trawl on the repeat station were analysed for stomach content (table 1). The juveniles were all sampled at night time in the near-surface layer (30-40 m) and ranged in size from 8.5 cm to 13.3 cm. Three prey groups were identified in the stomachs (euphausiids, amphipods, and fish (*Maurolicus muelleri* and *Lampanyctodes hectoris*)). When grouped into two size groups (larger and smaller than 10.0 cm) there was a tendency of more fish prey and less crustacean prey in the diet of the larger size group compared to the smaller size group. However, both fish prey and crustacean prey were found in stomachs of both size groups and even the smallest *M. paradoxus* (8.5 cm) had a *M. muelleri* in the stomach showing that they are piscivorous even at that small size. Based on the material preserved during the survey, further analyses of gut content will be done in order to better quantify the importance of different prey groups for juvenile *M. paradoxus*.

Table 1. Stomach content of juvenile *M. paradoxus*.

Station	Fish no	TL (mm)	Weight (g)	Stomach (g)	Euph	Amphipods	M. muelleri	L. hectoris
82	1	120	11.4	0				
82	2	110	9	0				
82	3	93	5.2	0				
82	4	124	12.2	0				
82	5	133	16.7	0				
82	6	97	5.8	0				
82	7	120	11.5	0				
82	8	99	6.1	0.1	1	0	0	1
82	9	95	5.5	0.2	2	7	0	0
82	10	87	3.7 <0.1		0	1	0	0
82	11	87	4	0.1	2	2	0	0
82	12	107	7.6	0.1	0	4	0	0
82	13	118	11 <0.1		0	1	0	0
82	14	85	4.1	0.02	0	0	1	0
82	15	92	4.8 <0.1		1	0	0	0
82	16	118	10.9	0.7	0	0	3	0
82	17	85	3.7 <0.1		0	1	0	0
82	18	95	5.1	0.1	0	7	0	0
82	19	106	7.9	0.1	0	4	0	0
82	20	128	13.9	0.2	0	0	1	0
82	21	115	10.2	0.5	0	0	0	1
82	22	133	15.9	0.3	0	1	1	0
82	23	100	6.4	0.1	1	2	0	0
82	24	97	5.6	0.2	0	0	1	0

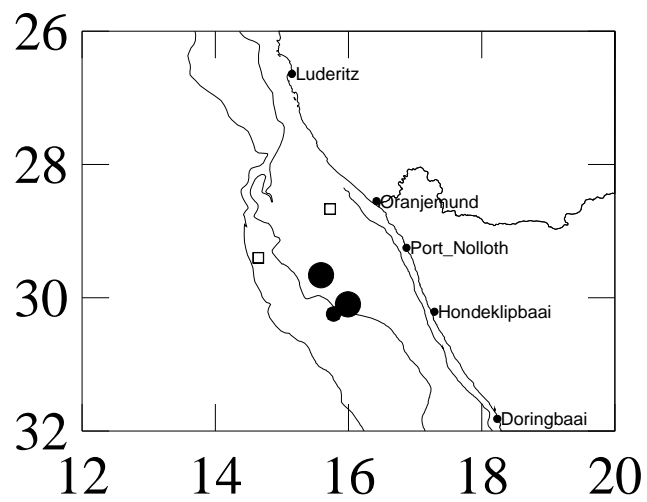
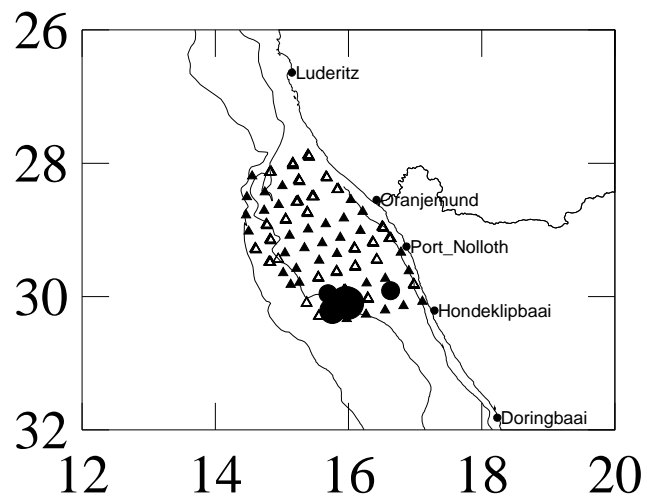
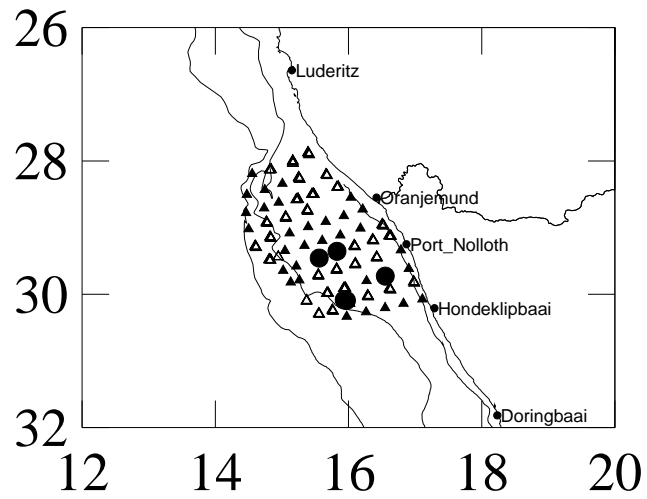


Figure 15. Occurrence of juvenile *M. paradoxus* in the Methot (upper), pelagic trawl (middle) and bottom trawl (lower).

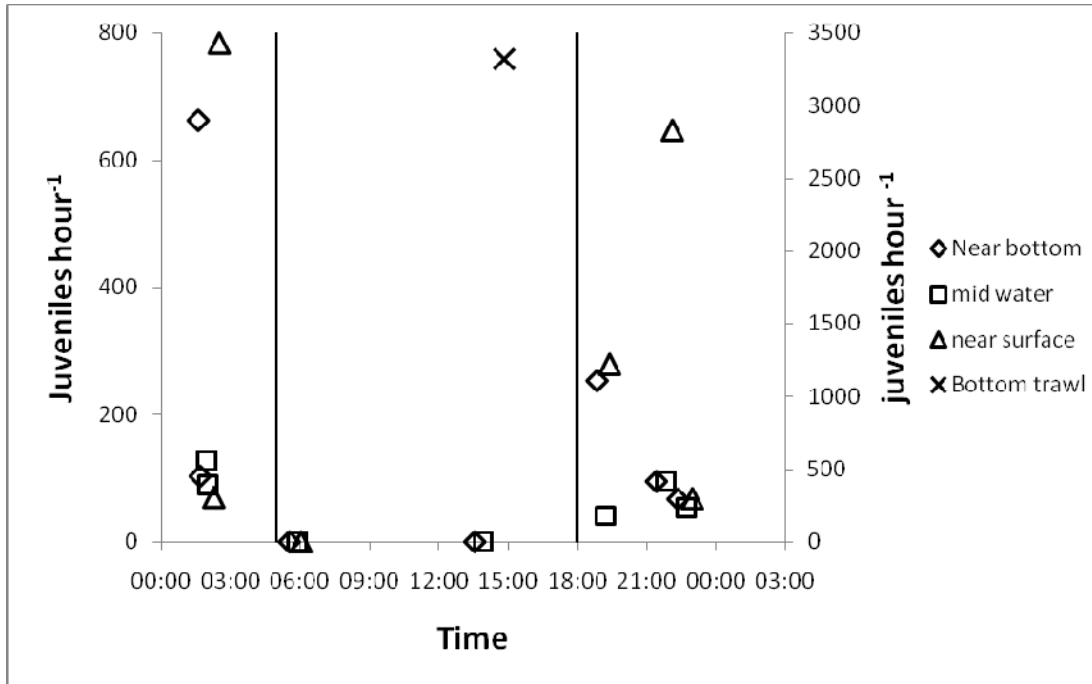


Figure 16. Catch and time (UTC) of catch of *M. paradoxus* during the repeat station. Right axis gives the catch for the bottom trawl. Vertical lines indicate transition between daytime and night time.

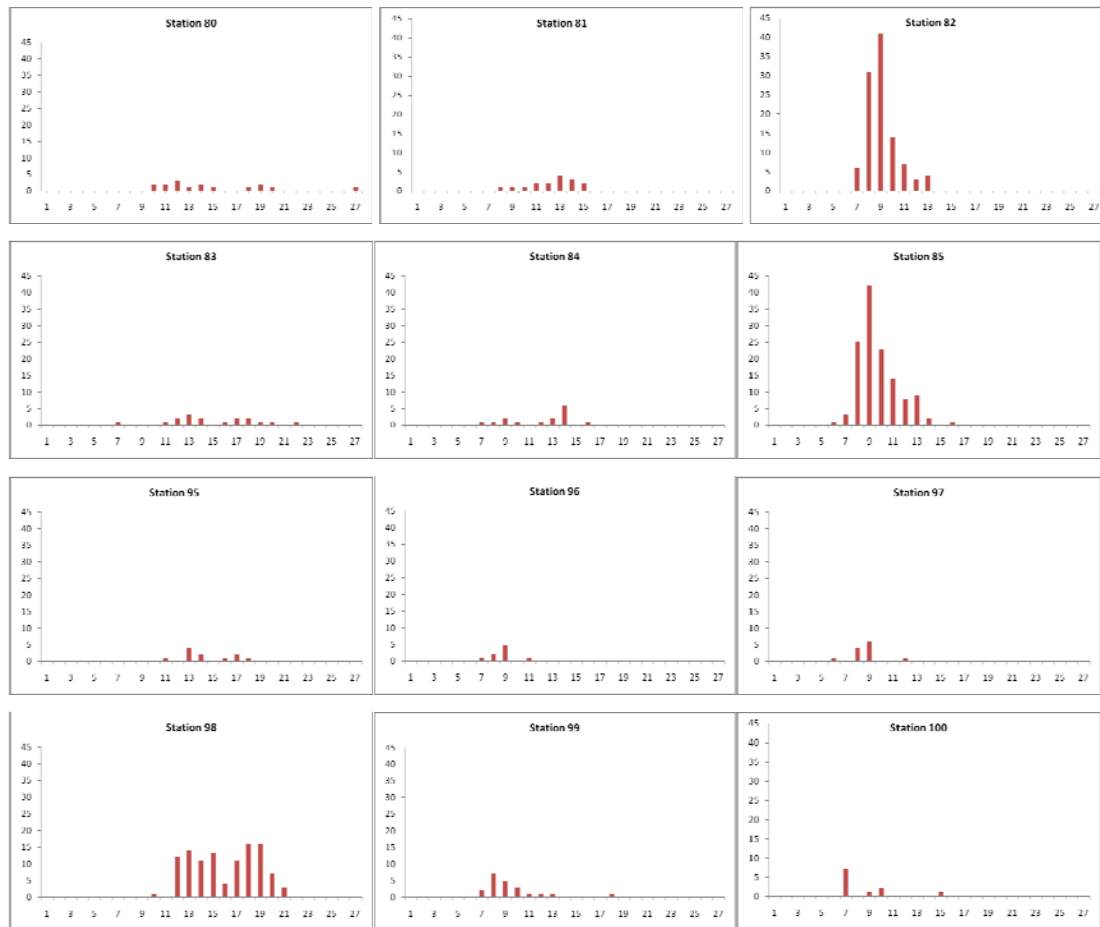


Figure 17. Length distributions of *M. paradoxus* juveniles caught at the repeat station in the Multisampler during night time in the layers near-bottom (left), mid-water (middle) and near-surface (right).

## 5 Conclusions

Since no juvenile *M. paradoxus* smaller than 5 cm were caught during the survey while relatively high concentrations of juveniles (6-20 cm) were found, it is reasonable to assume that the juveniles at this time of the year already had passed the phase were they are entirely pelagic. Juvenile *M. paradoxus* in the size range 6-20 cm performed vertical migration, being demersal during daytime and lifting up from the bottom at night. The smaller juveniles (6-10 cm) perform the most extensive vertical migrations, from being demersal (200 m depth) during daytime to the being in the upper 40 m during night time. Gut analysis showed that the juveniles migrated towards the surface at night most likely in order to follow the vertical migration of prey species consisting of euphausiids, amphipods, *M. muelleri* and *L. hectoris*.



## 6 References

Crawford, R.J.M., Shannon, L.V. and D.E. Pollock 1987. The Benguela Ecosystem. Part IV. The major fish and invertebrate resources. *Oceanogr. Mar. Biol. Ann. Rev.* 25: 353-505.

Hutchings, L., Beckley, L.E., Griffiths, M.H., Roberts, M.J., Sundby, S., and C. van der Lingen 2002. Spawning on the edge: grounds and nursery areas around the southern African coastline. *Mar. Freshwater Res.* 53: 307-318.

Stenevik, E.K., Verheye, H.M., Lipinski, M.R., Ostrowski, M. and Strømme, T. 2008. Drift routes of Cape hake eggs and larvae in the southern Benguela Current system. *Journal of Plankton Research*, 30(10): 1147-1156.

Strømme, T., Kainge, P., Lipinski, M., Ostrowski, M., Stenevik, E.K. and Alvheim, O. 2005. Transboundary survey between Namibia and South Africa with focus on spawning and the early life history of hakes. SURVEY NO.3 2005. Bergen 2005, 64 pp. Mimeo.

# ANNEX I Records of fishing stations

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 1  
 DATE :23.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 27°52.96  
 start stop duration Lon E 15°24.55  
 TIME :09:19:41 09:29:31 9.8 (min) Purpose : 1  
 LOG : 5598.60 5599.19 0.6 Region : 5000  
 FDEPTH: 90 90 Gear cond.: 0  
 BDEPTH: 123 124 Validity : 0  
 Towing dir: 0° Wire out : 230 m Speed : 3.6 kn  
 Sorted : 3 Total catch: 3.10 Catch/hour: 18.90

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 8  
 DATE :23.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°6.66  
 start stop duration Lon E 14°48.96  
 TIME :17:33:49 17:43:29 9.7 (min) Purpose : 1  
 LOG : 5646.09 5646.70 0.6 Region : 5000  
 FDEPTH: 50 50 Gear cond.: 0  
 BDEPTH: 204 205 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.8 kn  
 Sorted : 1 Total catch: 1.10 Catch/hour: 6.83

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	18.90 0	100.00	
Total	18.90	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	6.83 0	100.00	
Total	6.83	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 2  
 DATE :23.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 27°52.10  
 start stop duration Lon E 15°24.04  
 TIME :09:36:48 09:46:54 10.1 (min) Purpose : 1  
 LOG : 5599.58 5600.16 0.6 Region : 5000  
 FDEPTH: 50 50 Gear cond.: 0  
 BDEPTH: 125 127 Validity : 0  
 Towing dir: 0° Wire out : 125 m Speed : 3.5 kn  
 Sorted : 3 Total catch: 2.80 Catch/hour: 16.63

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 9  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°15.22  
 start stop duration Lon E 15°15.98  
 TIME :06:07:54 06:16:24 8.5 (min) Purpose : 1  
 LOG : 5734.19 5734.65 0.5 Region : 5000  
 FDEPTH: 120 120 Gear cond.: 0  
 BDEPTH: 150 150 Validity : 0  
 Towing dir: 0° Wire out : 285 m Speed : 3.2 kn  
 Sorted : 24 Total catch: 23.90 Catch/hour: 168.71

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	16.63 0	100.00	
Total	16.63	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	166.59 0	98.74	
Etrumeus whiteheadi	2.12 42	1.26	1
Maurollicus muelleri	0.00 7	0.00	
Total	168.71	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 3  
 DATE :23.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 27°51.13  
 start stop duration Lon E 15°23.49  
 TIME :09:55:44 10:05:51 10.1 (min) Purpose : 1  
 LOG : 5600.67 5601.28 0.6 Region : 5000  
 FDEPTH: 26 27 Gear cond.: 0  
 BDEPTH: 128 129 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.7 kn  
 Sorted : 2 Total catch: 2.00 Catch/hour: 11.87

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 10  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°14.35  
 start stop duration Lon E 15°15.53  
 TIME :06:26:19 06:36:07 9.8 (min) Purpose : 1  
 LOG : 5735.15 5735.69 0.5 Region : 5000  
 FDEPTH: 50 50 Gear cond.: 0  
 BDEPTH: 151 151 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.3 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	11.87 0	100.00	
Total	11.87	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
N O C A T C H	0.00 0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 4  
 DATE :23.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°0.73  
 start stop duration Lon E 15°9.90  
 TIME :13:16:53 13:26:24 9.5 (min) Purpose : 1  
 LOG : 5621.02 5621.60 0.6 Region : 5000  
 FDEPTH: 125 125 Gear cond.: 0  
 BDEPTH: 156 157 Validity : 0  
 Towing dir: 0° Wire out : 325 m Speed : 3.7 kn  
 Sorted : 8 Total catch: 8.45 Catch/hour: 53.26

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 11  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°13.45  
 start stop duration Lon E 15°15.12  
 TIME :06:43:55 06:54:31 10.6 (min) Purpose : 1  
 LOG : 5736.10 5736.72 0.6 Region : 5000  
 FDEPTH: 25 25 Gear cond.: 0  
 BDEPTH: 151 150 Validity : 0  
 Towing dir: 0° Wire out : 55 m Speed : 3.5 kn  
 Sorted : 1 Total catch: 0.95 Catch/hour: 5.38

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	53.26 0	100.00	
Total	53.26	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	5.38 0	100.00	
Total	5.38	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 5  
 DATE :23.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 27°59.55  
 start stop duration Lon E 15°9.87  
 TIME :13:37:02 13:47:02 10.0 (min) Purpose : 1  
 LOG : 5622.20 5622.83 0.6 Region : 5000  
 FDEPTH: 50 50 Gear cond.: 0  
 BDEPTH: 157 158 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.8 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 12  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°10.87  
 start stop duration Lon E 15°39.83  
 TIME :09:50:19 10:00:10 9.9 (min) Purpose : 1  
 LOG : 5760.68 5761.23 0.6 Region : 5000  
 FDEPTH: 75 75 Gear cond.: 0  
 BDEPTH: 106 106 Validity : 0  
 Towing dir: 0° Wire out : 140 m Speed : 3.4 kn  
 Sorted : 14 Total catch: 13.80 Catch/hour: 84.06

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
N O C A T C H	0.00 0	0.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	84.06 0	100.00	
Total	84.06	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 6  
 DATE :23.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 27°58.43  
 start stop duration Lon E 15°9.83  
 TIME :13:55:15 14:05:55 10.7 (min) Purpose : 1  
 LOG : 5623.31 5623.96 0.7 Region : 5000  
 FDEPTH: 25 25 Gear cond.: 0  
 BDEPTH: 158 156 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.7 kn  
 Sorted : 1 Total catch: 1.15 Catch/hour: 6.47

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 13  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°11.74  
 start stop duration Lon E 15°40.61  
 TIME :10:10:19 10:20:08 9.8 (min) Purpose : 1  
 LOG : 5761.77 5762.39 0.6 Region : 5000  
 FDEPTH: 25 25 Gear cond.: 0  
 BDEPTH: 107 108 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.7 kn  
 Sorted : 1 Total catch: 1.15 Catch/hour: 7.03

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	6.47 0	100.00	
Total	6.47	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	7.03 0	100.00	
Total	7.03	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 7  
 DATE :23.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°6.40  
 start stop duration Lon E 14°50.26  
 TIME :17:10:46 17:20:36 9.8 (min) Purpose : 1  
 LOG : 5644.89 5645.44 0.6 Region : 5000  
 FDEPTH: 170 170 Gear cond.: 0  
 BDEPTH: 205 205 Validity : 0  
 Towing dir: 0° Wire out : 420 m Speed : 3.4 kn  
 Sorted : 7 Total catch: 7.23 Catch/hour: 44.09

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 14  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°21.98  
 start stop duration Lon E 15°50.75  
 TIME :12:28:19 12:38:06 9.8 (min) Purpose : 1  
 LOG : 5777.22 5777.71 0.5 Region : 5000  
 FDEPTH: 75 80 Gear cond.: 0  
 BDEPTH: 115 119 Validity : 0  
 Towing dir: 0° Wire out : 140 m Speed : 3.0 kn  
 Sorted : 6 Total catch: 6.36 Catch/hour: 39.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	43.90 0	99.57	
Lepidopus caudatus	0.17 6	0.39	
Lolligoncula mercatoris	0.01 6	0.03	
Maurollicus muelleri	0.01 18	0.01	
Total	44.09	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	38.61 0	99.01	
Lepidopus caudatus	0.20 6	0.52	
Lolligoncula mercatoris	0.18 12	0.47	
Total	39.00	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 15  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°22.25  
 start stop duration Lon E 15°49.63  
 TIME :12:48:50 13:00:00 11.2 (min) Purpose : 1  
 LOG : 5778.26 5778.90 0.6 Region : 5000  
 FDEPTH: 26 25 Gear cond.: 0  
 BDEPTH: 120 122 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.5 kn  
 Sorted : 2 Total catch: 2.30 Catch/hour: 12.35

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Aequorea sp.	12.35	0	100.00	
Total	12.35		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 16  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°28.56  
 start stop duration Lon E 15°28.55  
 TIME :15:28:31 15:38:03 9.5 (min) Purpose : 1  
 LOG : 5798.07 5798.63 0.6 Region : 5000  
 FDEPTH: 133 132 Gear cond.: 0  
 BDEPTH: 167 167 Validity : 0  
 Towing dir: 0° Wire out : 293 m Speed : 3.5 kn  
 Sorted : 3 Total catch: 2.91 Catch/hour: 18.30

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Aequorea sp.	17.92	0	97.97	
Maurollicus muelleri	0.31	484	1.72	
Lolligoncula mercatoris	0.03	13	0.17	
Lepidopus caudatus	0.03	6	0.14	
SALPS	0.00	6	0.00	
Total	18.30		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 17  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°28.65  
 start stop duration Lon E 15°27.89  
 TIME :15:38:48 15:47:50 9.0 (min) Purpose : 1  
 LOG : 5798.66 5799.13 0.5 Region : 5000  
 FDEPTH: 132 55 Gear cond.: 0  
 BDEPTH: 167 166 Validity : 0  
 Towing dir: 0° Wire out : 112 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 0.24 Catch/hour: 1.59

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Todaropsis eblanae	0.66	13	0.00	
Maurollicus muelleri	0.64	13761	0.00	
Aequorea sp.	0.29	0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 18  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°28.64  
 start stop duration Lon E 15°27.06  
 TIME :15:52:35 16:02:38 10.1 (min) Purpose : 1  
 LOG : 5799.41 5799.85 0.4 Region : 5000  
 FDEPTH: 48 48 Gear cond.: 0  
 BDEPTH: 166 164 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 2.6 kn  
 Sorted : 1 Total catch: 0.55 Catch/hour: 3.28

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Aequorea sp.	3.28	0	100.00	
Total	3.28		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 19  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°33.06  
 start stop duration Lon E 15°14.48  
 TIME :17:41:36 17:51:50 10.2 (min) Purpose : 1  
 LOG : 5811.84 5812.38 0.5 Region : 5000  
 FDEPTH: 150 150 Gear cond.: 0  
 BDEPTH: 181 179 Validity : 0  
 Towing dir: 0° Wire out : 320 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 0.07 Catch/hour: 0.42

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Lolligoncula mercatoris	0.01	6	0.00	
Iniotheuthis capensis	0.01	6	0.00	0
Maurollicus muelleri	0.38	797	0.00	
Leptocephalus	0.02	6	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 20  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°33.28  
 start stop duration Lon E 15°13.75  
 TIME :17:54:26 18:04:45 10.3 (min) Purpose : 1  
 LOG : 5812.52 5813.03 0.5 Region : 5000  
 FDEPTH: 150 50 Gear cond.: 0  
 BDEPTH: 179 178 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.0 kn  
 Sorted : 1 Total catch: 1.13 Catch/hour: 6.58

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Etrumeus whiteheadi	6.10	93	92.84	2
Maurollicus muelleri	0.37	779	5.57	
Iniotheuthis capensis	0.10	52	1.50	
Lycoteuthis lorigera	0.01	17	0.11	
Aequorea sp.	0.00	0	0.00	
Total	6.58		100.02	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 21  
 DATE :24.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°33.53  
 start stop duration Lon E 15°12.92  
 TIME :18:09:39 18:19:58 10.3 (min) Purpose : 1  
 LOG : 5813.31 5813.90 0.6 Region : 5000  
 FDEPTH: 50 50 Gear cond.: 0  
 BDEPTH: 177 175 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.4 kn  
 Sorted : 0 Total catch: 0.01 Catch/hour: 0.05

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Maurollicus muelleri	0.00	6	0.00	
Iniotheuthis capensis	0.05	23	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 22  
 DATE :25.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°54.84  
 start stop duration Lon E 14°46.79  
 TIME :06:36:44 06:47:20 10.6 (min) Purpose : 1  
 LOG : 5896.17 5896.75 0.6 Region : 5000  
 FDEPTH: 165 170 Gear cond.: 0  
 BDEPTH: 202 202 Validity : 0  
 Towing dir: 0° Wire out : 380 m Speed : 3.3 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
N O C A T C H	0.00	0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 23  
 DATE :25.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°54.31  
 start stop duration Lon E 14°46.47  
 TIME :06:47:54 06:58:34 10.7 (min) Purpose : 1  
 LOG : 5896.77 5897.28 0.5 Region : 5000  
 FDEPTH: 170 56 Gear cond.: 0  
 BDEPTH: 202 202 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 2.9 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
N O C A T C H	0.00	0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 24  
 DATE :25.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°53.57  
 start stop duration Lon E 14°46.04  
 TIME :07:03:50 07:13:53 10.0 (min) Purpose : 1  
 LOG : 5897.60 5898.19 0.6 Region : 5000  
 FDEPTH: 50 52 Gear cond.: 0  
 BDEPTH: 202 202 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 3.5 kn  
 Sorted : 0 Total catch: 0.01 Catch/hour: 0.06

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Iniotheuthis capensis	0.06	24	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 25  
 DATE :25.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°50.02  
 start stop duration Lon E 15°3.57  
 TIME :09:45:42 09:55:38 9.9 (min) Purpose : 1  
 LOG : 5916.37 5916.94 0.6 Region : 5000  
 FDEPTH: 145 140 Gear cond.: 0  
 BDEPTH: 171 171 Validity : 0  
 Towing dir: 0° Wire out : 325 m Speed : 3.4 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.02

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Lepidopus caudatus	0.02	6	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 26  
 DATE :25.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°49.42  
 start stop duration Lon E 15°3.46  
 TIME :09:56:19 10:06:37 10.3 (min) Purpose : 1  
 LOG : 5916.98 5917.51 0.5 Region : 5000  
 FDEPTH: 140 25 Gear cond.: 0  
 BDEPTH: 171 170 Validity : 0  
 Towing dir: 0° Wire out : 0 m Speed : 3.1 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
N O C A T C H	0.00	0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 27  
 DATE :25.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°48.72  
 start stop duration Lon E 15°3.36  
 TIME :10:09:52 10:19:42 9.8 (min) Purpose : 1  
 LOG : 5917.67 5918.20 0.5 Region : 5000  
 FDEPTH: 26 29 Gear cond.: 0  
 BDEPTH: 171 171 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.2 kn  
 Sorted : 41 Total catch: 40.50 Catch/hour: 246.98

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
SALPS	246.95	0	99.99	
Leptocephalus	0.02	6	0.01	
Austroglossus microlepis	0.01	6	0.00	
Total	246.98		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 28  
 DATE :25.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°43.84  
 start stop duration Lon E 15°23.17  
 TIME :12:56:38 13:06:32 9.9 (min) Purpose : 1  
 LOG : 5938.01 5938.54 0.5 Region : 5000  
 FDEPTH: 157 154 Gear cond.: 0  
 BDEPTH: 190 191 Validity : 0  
 Towing dir: 0° Wire out : 325 m Speed : 3.2 kn  
 Sorted : 0 Total catch: 0.06 Catch/hour: 0.36

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mmaostrephes bartrami	0.01	24	0.00	
Maurollicus muelleri	0.00	6	0.00	
Aequorea sp.	0.34	0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 29  
 DATE :25.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°43.30  
 start stop duration Lon E 15°22.97  
 TIME :13:07:18 13:17:22 10.1 (min) Purpose : 1  
 LOG : 5938.58 5939.08 0.5 Region : 5000  
 FDEPTH: 0 27 Gear cond.: 0  
 BDEPTH: 191 191 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.0 kn  
 Sorted : 0 Total catch: 0.37 Catch/hour: 2.21

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
SALPS	0.01	0	0.00	
Nemichthys scolopaceus, juvenile	0.02	6	0.00	
Austroglossus microlepis, juvenile	0.00	6	0.00	
Lycoteuthis lorigera	0.04	12	0.00	
Aequorea sp.	2.14	0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 30  
 DATE :25.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°42.58  
 start stop duration Lon E 15°22.77  
 TIME :13:21:31 13:31:26 9.9 (min) Purpose : 1  
 LOG : 5939.31 5939.87 0.6 Region : 5000  
 FDEPTH: 26 26 Gear cond.: 0  
 BDEPTH: 191 191 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.4 kn  
 Sorted : 1 Total catch: 0.57 Catch/hour: 3.46

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 36  
 DATE :26.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°15.79  
 start stop duration Lon E 14°36.29  
 TIME :10:33:12 10:46:58 13.8 (min) Purpose : 1  
 LOG : 6096.14 6096.72 0.6 Region : 5000  
 FDEPTH: 270 36 Gear cond.: 0  
 BDEPTH: 303 302 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 2.5 kn  
 Sorted : 2 Total catch: 1.90 Catch/hour: 8.28

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Aequorea sp.	3.45	0	99.65	
SALFS	0.01	0	0.35	
Total	3.46		100.00	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mauroliticus muelleri	8.28	20593	100.00	
SALFS	0.00	4	0.00	
Total	8.28		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 31  
 DATE :25.02.2009 GEAR TYPE: PT NO: 22 POSITION:Lat S 28°40.05  
 start stop duration Lon E 15°43.35  
 TIME :16:19:00 16:29:02 10.0 (min) Purpose : 1  
 LOG : 5962.04 5962.55 0.5 Region : 5000  
 FDEPTH: 162 159 Gear cond.: 0  
 BDEPTH: 162 159 Validity : 0  
 Towing dir: 0° Wire out : 400 m Speed : 3.0 kn  
 Sorted : 56 Total catch: 55.95 Catch/hour: 334.39

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 37  
 DATE :26.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°16.47  
 start stop duration Lon E 14°36.78  
 TIME :10:51:28 11:01:20 9.9 (min) Purpose : 1  
 LOG : 6096.96 6097.48 0.5 Region : 5000  
 FDEPTH: 34 32 Gear cond.: 0  
 BDEPTH: 301 298 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.2 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Merluccius capensis	143.43	1351	42.89	5
Etrumeus whiteheadi	71.71	980	21.45	
Mauroliticus muelleri	32.87	0	9.83	
Brama brama	32.57	12	9.74	3
Aequorea sp.	11.95	0	3.57	
Merluccius capensis	11.95	873	3.57	6
Merluccius capensis	9.56	12	2.86	4
Helicolenus dactylopterus	6.93	382	2.07	7
Chelidonichthys capensis	4.84	12	1.45	9
Sepia australis	2.45	96	0.73	
Genypterus capensis	1.37	12	0.41	8
Caelorinchus simorhynchus	0.87	30	0.26	
Caelorinchus simorhynchus	0.87	30	0.26	
Trachurus capensis	0.63	6	0.19	0
Sardinops ocellatus	0.59	6	0.18	
Trichurus lepturus	0.58	12	0.17	
Paracallionymus costatus	0.38	18	0.11	
Lolligoncula mercatoris	0.30	131	0.09	
Todaropsis eblanae	0.20	6	0.06	
Pterygosquilla armata capensis	0.14	6	0.04	
Small crabs	0.13	6	0.04	
Cynoglossus zanzibarensis	0.05	6	0.02	
Total	334.39		100.00	

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
N O C A T C H	0.00	0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 38  
 DATE :26.02.2009 GEAR TYPE: PT NO: 22 POSITION:Lat S 29°23.99  
 start stop duration Lon E 14°38.73  
 TIME :12:16:30 12:31:14 14.7 (min) Purpose : 1  
 LOG : 6105.05 6105.75 0.7 Region : 5000  
 FDEPTH: 325 323 Gear cond.: 0  
 BDEPTH: 325 323 Validity : 0  
 Towing dir: 0° Wire out : 750 m Speed : 2.9 kn  
 Sorted : 152 Total catch: 799.89 Catch/hour: 3260.40

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Zeus faber	1469.39	2812	45.07	17
Merluccius paradoxus	1250.54	9677	38.36	18
Helicolenus dactylopterus	143.76	1186	4.41	19
Merluccius capensis	99.86	49	3.06	12
Merluccius paradoxus	73.37	77	2.25	11
Epigonus telescopus	72.23	1406	2.22	
Caelorinchus simorhynchus	46.26	656	1.42	
Malacocephalus laevis	20.31	94	0.62	
Holohalaelurus regani	15.90	57	0.49	
Lophius vomerinus	13.45	4	0.41	14
Genypterus capensis	12.23	12	0.38	13
Todaropsis eblanae, male	8.31	94	0.25	22
Todaropsis angolensis, female	8.15	12	0.25	15
Todaropsis eblanae, female	6.15	94	0.19	23
Cynoglossus zanzibarensis	3.75	94	0.12	20
Small crabs	3.75	689	0.12	
Paracallionymus costatus	3.14	281	0.10	
Rossia enigmatica	2.91	126	0.09	
Todaropsis angolensis, male	2.04	8	0.06	16
Scyliorhinus capensis	1.10	4	0.03	
Galeus polli	0.65	4	0.02	
Total	3257.26		99.90	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 32  
 DATE :26.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°8.37  
 start stop duration Lon E 14°50.17  
 TIME :07:12:54 07:22:56 10.0 (min) Purpose : 1  
 LOG : 6076.69 6077.22 0.5 Region : 5000  
 FDEPTH: 175 165 Gear cond.: 0  
 BDEPTH: 215 218 Validity : 0  
 Towing dir: 0° Wire out : 350 m Speed : 3.2 kn  
 Sorted : 7 Total catch: 6.55 Catch/hour: 39.17

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mauroliticus muelleri	39.14	0	99.94	
Todaropsis eblanae	0.02	6	0.05	
Lycoteuthis lorigera	0.01	6	0.02	
Total	39.17		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 39  
 DATE :26.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°27.50  
 start stop duration Lon E 14°48.39  
 TIME :14:26:11 14:35:58 9.8 (min) Purpose : 1  
 LOG : 6114.66 6115.16 0.5 Region : 5000  
 FDEPTH: 250 250 Gear cond.: 0  
 BDEPTH: 296 294 Validity : 0  
 Towing dir: 0° Wire out : 575 m Speed : 3.0 kn  
 Sorted : 1 Total catch: 1.05 Catch/hour: 6.44

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mauroliticus muelleri	6.44	19900	100.00	
Total	6.44		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 33  
 DATE :26.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°7.88  
 start stop duration Lon E 14°49.83  
 TIME :07:23:42 07:36:32 12.8 (min) Purpose : 1  
 LOG : 6077.26 6077.93 0.7 Region : 5000  
 FDEPTH: 170 50 Gear cond.: 0  
 BDEPTH: 218 219 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.1 kn  
 Sorted : 1 Total catch: 0.50 Catch/hour: 2.34

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mauroliticus muelleri	2.34	0	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 40  
 DATE :26.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°27.62  
 start stop duration Lon E 14°48.97  
 TIME :14:37:05 14:51:37 14.5 (min) Purpose : 1  
 LOG : 6115.19 6115.80 0.6 Region : 5000  
 FDEPTH: 250 55 Gear cond.: 0  
 BDEPTH: 294 291 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 2.5 kn  
 Sorted : 0 Total catch: 0.35 Catch/hour: 1.44

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mauroliticus muelleri	1.44	5080	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 34  
 DATE :26.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°7.00  
 start stop duration Lon E 14°49.26  
 TIME :07:42:33 07:53:00 10.4 (min) Purpose : 1  
 LOG : 6078.27 6078.93 0.7 Region : 5000  
 FDEPTH: 50 45 Gear cond.: 0  
 BDEPTH: 214 220 Validity : 0  
 Towing dir: 0° Wire out : 125 m Speed : 3.8 kn  
 Sorted : 1 Total catch: 1.15 Catch/hour: 6.60

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Scomber japonicus	6.60	6	100.00	10
Total	6.60		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 41  
 DATE :26.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°27.80  
 start stop duration Lon E 14°49.85  
 TIME :14:55:24 15:05:09 9.8 (min) Purpose : 1  
 LOG : 6116.01 6116.59 0.6 Region : 5000  
 FDEPTH: 50 50 Gear cond.: 0  
 BDEPTH: 290 296 Validity : 0  
 Towing dir: 0° Wire out : 90 m Speed : 3.5 kn  
 Sorted : 0 Total catch: 0.03 Catch/hour: 0.18

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mauroliticus muelleri	0.18	154	0.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 35  
 DATE :26.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°15.32  
 start stop duration Lon E 14°35.94  
 TIME :10:22:50 10:32:32 9.7 (min) Purpose : 1  
 LOG : 6095.58 6096.12 0.5 Region : 5000  
 FDEPTH: 267 270 Gear cond.: 0  
 BDEPTH: 306 304 Validity : 0  
 Towing dir: 0° Wire out : 650 m Speed : 3.3 kn  
 Sorted : 3 Total catch: 2.55 Catch/hour: 15.77

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mauroliticus muelleri	15.77	38852	100.00	
Lycoteuthis lorigera	0.00	6	0.00	
Total	15.77		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 42  
 DATE :26.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°24.92  
 start stop duration Lon E 14°56.67  
 TIME :16:22:02 16:35:35 13.5 (min) Purpose : 1  
 LOG : 6124.94 6125.72 0.8 Region : 5000  
 FDEPTH: 160 150 Gear cond.: 0  
 BDEPTH: 211 223 Validity : 0  
 Towing dir: 0° Wire out : 320 m Speed : 3.5 kn  
 Sorted : 8 Total catch: 7.90 Catch/hour: 35.01

SPECIES	CATCH/HOUR		% OF TOT. C	SAMP
	weight	numbers		
Mauroliticus muelleri	35.01	115157	100.00	
Total	35.01		100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 43  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°55.80  
 start stop duration Lon E 16°30.36  
 TIME :06:16:48 06:30:26 13.6 (min) Purpose : 1  
 LOG : 6222.75 6223.53 0.8 Region : 5000  
 FDEPTH: 75 70 Gear cond.: 0  
 BDEPTH: 103 104 Validity : 0  
 Towing dir: 0° Wire out : 180 m Speed : 3.5 kn  
 Sorted : 19 Total catch: 18.59 Catch/hour: 81.76

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 50  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°10.04  
 start stop duration Lon E 16°22.13  
 TIME :12:01:18 12:12:10 10.9 (min) Purpose : 1  
 LOG : 6254.44 6255.01 0.6 Region : 5000  
 FDEPTH: 110 26 Gear cond.: 0  
 BDEPTH: 141 141 Validity : 0  
 Towing dir: 0° Wire out : 260 m Speed : 3.1 kn  
 Sorted : 2 Total catch: 1.82 Catch/hour: 10.05

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	59.25	0	72.47
Etrumeus whiteheadi	22.21	440	27.17
Lolligoncula mercatoris	0.26	132	0.31
Todaropsis eblanae	0.04	9	0.05
Total	81.76	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	10.05	0	100.00
Total	10.05	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 44  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°56.44  
 start stop duration Lon E 16°30.95  
 TIME :06:31:01 06:41:01 10.0 (min) Purpose : 1  
 LOG : 6223.56 6224.13 0.6 Region : 5000  
 FDEPTH: 70 40 Gear cond.: 0  
 BDEPTH: 104 104 Validity : 0  
 Towing dir: 0° Wire out : 98 m Speed : 3.4 kn  
 Sorted : 102 Total catch: 102.20 Catch/hour: 613.81

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 51  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°9.43  
 start stop duration Lon E 16°21.74  
 TIME :12:14:39 12:24:34 9.9 (min) Purpose : 1  
 LOG : 6255.15 6255.73 0.6 Region : 5000  
 FDEPTH: 26 27 Gear cond.: 0  
 BDEPTH: 142 141 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.5 kn  
 Sorted : 3 Total catch: 2.93 Catch/hour: 17.74

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Etrumeus whiteheadi	613.81	11640	100.00
Total	613.81	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	17.74	0	100.00
Total	17.74	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 45  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 28°57.07  
 start stop duration Lon E 16°31.58  
 TIME :06:45:56 06:57:55 12.0 (min) Purpose : 1  
 LOG : 6224.40 6225.04 0.6 Region : 5000  
 FDEPTH: 65 75 Gear cond.: 0  
 BDEPTH: 104 105 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.2 kn  
 Sorted : 15 Total catch: 15.45 Catch/hour: 77.31

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 52  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°15.84  
 start stop duration Lon E 16°5.83  
 TIME :15:11:35 15:21:20 9.8 (min) Purpose : 1  
 LOG : 6273.94 6274.52 0.6 Region : 5000  
 FDEPTH: 140 140 Gear cond.: 0  
 BDEPTH: 171 171 Validity : 0  
 Towing dir: 0° Wire out : 360 m Speed : 3.6 kn  
 Sorted : 125 Total catch: 125.43 Catch/hour: 771.88

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Etrumeus whiteheadi	46.04	886	59.55
Aequorea sp.	31.28	0	40.45
Total	77.31	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Etrumeus whiteheadi	372.12	6972	48.21
Maurololicus muelleri	319.08	1156074	41.34
Aequorea sp.	80.68	0	10.45
Total	771.88	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 46  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°6.36  
 start stop duration Lon E 16°38.20  
 TIME :08:51:51 09:01:54 10.1 (min) Purpose : 1  
 LOG : 6237.34 6237.91 0.6 Region : 5000  
 FDEPTH: 73 78 Gear cond.: 0  
 BDEPTH: 106 110 Validity : 0  
 Towing dir: 0° Wire out : 190 m Speed : 3.4 kn  
 Sorted : 19 Total catch: 19.13 Catch/hour: 114.21

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 53  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°15.33  
 start stop duration Lon E 16°5.43  
 TIME :15:22:09 15:32:00 9.9 (min) Purpose : 1  
 LOG : 6274.55 6275.04 0.5 Region : 5000  
 FDEPTH: 140 50 Gear cond.: 0  
 BDEPTH: 171 171 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.0 kn  
 Sorted : 48 Total catch: 48.10 Catch/hour: 293.02

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	83.28	0	72.92
Etrumeus whiteheadi	29.85	573	26.14
Lepidopus caudatus	0.60	78	0.52
Lolligoncula mercatoris	0.45	263	0.40
Todaropsis eblanae	0.02	6	0.02
Total	114.21	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Maurololicus muelleri	189.44	686382	64.65
Aequorea sp.	73.10	0	24.95
Etrumeus whiteheadi	30.46	573	10.39
Lolligoncula mercatoris	0.02	12	0.01
Total	293.02	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 47  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°6.23  
 start stop duration Lon E 16°37.53  
 TIME :09:02:54 09:13:58 11.1 (min) Purpose : 1  
 LOG : 6237.95 6238.54 0.6 Region : 5000  
 FDEPTH: 78 54 Gear cond.: 0  
 BDEPTH: 110 113 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.2 kn  
 Sorted : 21 Total catch: 21.08 Catch/hour: 114.24

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 54  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°14.73  
 start stop duration Lon E 16°5.15  
 TIME :15:34:48 15:44:37 9.8 (min) Purpose : 1  
 LOG : 6275.20 6275.85 0.7 Region : 5000  
 FDEPTH: 50 50 Gear cond.: 0  
 BDEPTH: 171 171 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 4.0 kn  
 Sorted : 1 Total catch: 1.10 Catch/hour: 6.72

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	84.28	0	73.77
Etrumeus whiteheadi	29.81	558	26.09
Lepidopus caudatus	0.09	11	0.08
Lolligoncula mercatoris	0.04	22	0.03
Todaropsis eblanae	0.02	11	0.02
Total	114.24	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	6.11	0	90.91
Maurololicus muelleri	0.61	2212	9.09
Total	6.72	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 48  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°6.04  
 start stop duration Lon E 16°36.52  
 TIME :09:19:37 09:29:51 10.2 (min) Purpose : 1  
 LOG : 6238.86 6239.48 0.6 Region : 5000  
 FDEPTH: 40 42 Gear cond.: 0  
 BDEPTH: 115 118 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 3.6 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 55  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°42.15  
 start stop duration Lon E 15°32.94  
 TIME :07:46:38 07:56:32 9.9 (min) Purpose : 1  
 LOG : 6386.66 6387.18 0.5 Region : 6000  
 FDEPTH: 155 160 Gear cond.: 0  
 BDEPTH: 194 193 Validity : 0  
 Towing dir: 0° Wire out : 325 m Speed : 3.2 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
N O C A T C H	0.00	0	0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
N O C A T C H	0.00	0	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 49  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°10.54  
 start stop duration Lon E 16°22.42  
 TIME :11:50:43 12:00:34 9.9 (min) Purpose : 1  
 LOG : 6253.88 6254.41 0.5 Region : 5000  
 FDEPTH: 107 110 Gear cond.: 0  
 BDEPTH: 141 141 Validity : 0  
 Towing dir: 0° Wire out : 260 m Speed : 3.3 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 56  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°41.61  
 start stop duration Lon E 15°32.81  
 TIME :07:57:01 08:07:16 10.3 (min) Purpose : 1  
 LOG : 6387.21 6387.70 0.5 Region : 6000  
 FDEPTH: 160 50 Gear cond.: 0  
 BDEPTH: 194 192 Validity : 0  
 Towing dir: 0° Wire out : 0 m Speed : 2.9 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
N O C A T C H	0.00	0	0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
N O C A T C H	0.00	0	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 57  
 DATE :27.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°41.09  
 start stop duration Lon E 15°32.72  
 TIME :08:11:29 08:21:32 10.1 (min) Purpose : 1  
 LOG : 6387.72 6388.45 0.7 Region : 6000  
 FDEPTH: 50 45 Gear cond.: 0  
 BDEPTH: 192 190 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 4.4 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 57  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°41.09  
 start stop duration Lon E 15°32.72  
 TIME :08:11:29 08:21:32 10.1 (min) Purpose : 1  
 LOG : 6387.72 6388.45 0.7 Region : 6000  
 FDEPTH: 50 45 Gear cond.: 0  
 BDEPTH: 192 190 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 4.4 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
N O C A T C H	0.00	0	0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
N O C A T C H	0.00	0	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 58  
 DATE :28.02.2009 GEAR TYPE: BT NO: 22 POSITION:Lat S 29°39.65  
 start stop duration Lon E 15°35.23  
 TIME :09:19:37 09:30:13 10.6 (min) Purpose : 1  
 LOG : 6394.05 6394.59 0.5 Region : 6000  
 FDEPTH: 187 189 Gear cond.: 0  
 BDEPTH: 187 189 Validity : 0  
 Towing dir: 0° Wire out : 430 m Speed : 3.0 kn  
 Sorted : 185 Total catch: 185.37 Catch/hour: 1049.26

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 64  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°30.89  
 start stop duration Lon E 16°6.13  
 TIME :15:01:53 15:11:37 9.7 (min) Purpose : 1  
 LOG : 6429.54 6430.18 0.6 Region : 6000  
 FDEPTH: 40 40 Gear cond.: 0  
 BDEPTH: 170 162 Validity : 0  
 Towing dir: 0° Wire out : 85 m Speed : 3.9 kn  
 Sorted : 0 Total catch: 0.40 Catch/hour: 2.47

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Etrumeus whiteheadi	254.72 3979	24.28	
Todaropsis eblanae, female	217.02 3906	20.68	35
Todaropsis eblanae, male	150.91 2706	14.38	34
Merluccius capensis	118.87 108	11.33	28
Merluccius paradoxus	83.77 962	7.98	36
Lophius vomerinus	55.47 40	5.29	31
Merluccius capensis	45.28 481	4.32	32
Lepidopus caudatus	31.13 221	2.97	
Helicolenus dactylopterus	14.77 260	1.41	37
Raja straeleni	14.15 11	1.35	
Squalus megalops	14.15 11	1.35	
Caelorinchus simorhynchus	12.85 119	1.22	
Chelidonichthys queketti	9.62 57	0.92	
Chelidonichthys capensis	6.23 17	0.59	30
Holohalaelurus regani	4.98 40	0.47	
Gonypterus capensis	4.02 11	0.38	39
Merluccius capensis	3.68 487	0.35	33
Sepia australis	1.64 221	0.16	
Cynoglossus zanzibarensis	1.42 17	0.13	38
Congiopodus spinifer	1.30 11	0.12	
Trachurus capensis	1.08 6	0.10	40
Paracallionymus costatus	1.02 102	0.10	
Lolligoncula mercatoris	0.51 153	0.05	
C R U S T A C E A N S	0.37 6	0.04	
Zeus capensis	0.19 11	0.02	41
Physiculus capensis	0.12 6	0.01	
Total	1049.26	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	2.47	0	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 65  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°25.91  
 start stop duration Lon E 16°25.58  
 TIME :17:25:43 17:35:35 9.9 (min) Purpose : 1  
 LOG : 6449.27 6449.82 0.6 Region : 6000  
 FDEPTH: 100 98 Gear cond.: 0  
 BDEPTH: 148 148 Validity : 0  
 Towing dir: 0° Wire out : 240 m Speed : 3.3 kn  
 Sorted : 2 Total catch: 1.82 Catch/hour: 11.06

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	8.33	0	75.27
MYCTOPHIDAE	1.76	1696	15.93
Maurollicus muelleri	0.97	1945	8.79
Total	11.06	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 66  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°25.05  
 start stop duration Lon E 16°25.33  
 TIME :17:42:20 17:47:18 5.0 (min) Purpose : 1  
 LOG : 6450.14 6450.47 0.3 Region : 6000  
 FDEPTH: 45 38 Gear cond.: 0  
 BDEPTH: 147 147 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 3.9 kn  
 Sorted : 83 Total catch: 82.91 Catch/hour: 1000.93

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
MYCTOPHIDAE	513.68	493920	51.32
Aequorea sp.	487.12	0	48.67
Lepidopus caudatus	0.09	12	0.01
42			
Total	1000.89	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 59  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°37.03  
 start stop duration Lon E 15°49.31  
 TIME :11:41:56 11:51:42 9.8 (min) Purpose : 1  
 LOG : 6410.33 6410.87 0.5 Region : 6000  
 FDEPTH: 151 148 Gear cond.: 0  
 BDEPTH: 180 183 Validity : 0  
 Towing dir: 0° Wire out : 345 m Speed : 3.3 kn  
 Sorted : 3 Total catch: 3.21 Catch/hour: 19.71

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	10.87	0	55.14
Maurollicus muelleri	8.84	9488	44.86
Total	19.71	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 67  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°52.95  
 start stop duration Lon E 15°57.27  
 TIME :06:36:47 06:48:14 11.4 (min) Purpose : 1  
 LOG : 6544.47 6545.10 0.6 Region : 6000  
 FDEPTH: 160 162 Gear cond.: 0  
 BDEPTH: 194 194 Validity : 0  
 Towing dir: 0° Wire out : 360 m Speed : 3.3 kn  
 Sorted : 1 Total catch: 0.61 Catch/hour: 3.20

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	3.20	5	100.00
Total	3.20	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 60  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°36.45  
 start stop duration Lon E 15°49.27  
 TIME :11:52:23 12:02:34 10.2 (min) Purpose : 1  
 LOG : 6410.90 6411.38 0.5 Region : 6000  
 FDEPTH: 148 30 Gear cond.: 0  
 BDEPTH: 183 183 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 2.8 kn  
 Sorted : 1 Total catch: 0.92 Catch/hour: 5.42

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	5.42	0	100.00
Total	5.42	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 68  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°53.13  
 start stop duration Lon E 15°56.56  
 TIME :06:48:42 06:59:23 10.7 (min) Purpose : 1  
 LOG : 6545.12 6545.62 0.5 Region : 6000  
 FDEPTH: 163 50 Gear cond.: 0  
 BDEPTH: 194 195 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 2.8 kn  
 Sorted : 1 Total catch: 1.36 Catch/hour: 7.63

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	7.63	17	100.00
Total	7.63	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 61  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°35.75  
 start stop duration Lon E 15°49.25  
 TIME :12:06:30 12:16:25 9.9 (min) Purpose : 1  
 LOG : 6411.60 6412.16 0.6 Region : 6000  
 FDEPTH: 27 30 Gear cond.: 0  
 BDEPTH: 184 184 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.4 kn  
 Sorted : 1 Total catch: 0.55 Catch/hour: 3.33

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	3.33	0	100.00
Total	3.33	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 69  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°53.29  
 start stop duration Lon E 15°55.76  
 TIME :07:03:39 07:13:43 10.1 (min) Purpose : 1  
 LOG : 6545.85 6546.44 0.6 Region : 6000  
 FDEPTH: 48 48 Gear cond.: 0  
 BDEPTH: 196 196 Validity : 0  
 Towing dir: 0° Wire out : 112 m Speed : 3.5 kn  
 Sorted : 1 Total catch: 0.51 Catch/hour: 3.04

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	3.04	6	100.00
Total	3.04	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 62  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°32.09  
 start stop duration Lon E 16°5.97  
 TIME :14:38:36 14:48:19 9.7 (min) Purpose : 1  
 LOG : 6428.35 6428.87 0.5 Region : 6000  
 FDEPTH: 140 140 Gear cond.: 0  
 BDEPTH: 175 175 Validity : 0  
 Towing dir: 0° Wire out : 300 m Speed : 3.2 kn  
 Sorted : 7 Total catch: 7.32 Catch/hour: 45.19

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	45.19	0	100.00
Total	45.19	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 70  
 DATE :01.03.2009 GEAR TYPE: PT NO: 7 POSITION:Lat S 29°57.46  
 start stop duration Lon E 15°41.47  
 TIME :09:02:14 09:16:10 13.9 (min) Purpose : 1  
 LOG : 6561.12 6561.98 0.9 Region : 6000  
 FDEPTH: 180 190 Gear cond.: 0  
 BDEPTH: 198 197 Validity : 0  
 Towing dir: 0° Wire out : 500 m Speed : 3.7 kn  
 Sorted : 2 Total catch: 2.38 Catch/hour: 10.27

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Callorhynchus capensis	5.90	4	57.44
Holohalaelurus regani	2.07	9	20.13
Merluccius capensis	0.78	4	7.55
Merluccius paradoxus	0.67	108	6.50
Chelidonichthys queketti	0.56	4	5.45
Sepia sp.	0.30	4	2.94
Total	10.27	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 63  
 DATE :28.02.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°31.53  
 start stop duration Lon E 16°6.02  
 TIME :14:49:16 14:58:50 9.6 (min) Purpose : 1  
 LOG : 6428.90 6429.36 0.5 Region : 6000  
 FDEPTH: 140 50 Gear cond.: 0  
 BDEPTH: 175 162 Validity : 0  
 Towing dir: 0° Wire out : 85 m Speed : 2.9 kn  
 Sorted : 4 Total catch: 3.58 Catch/hour: 22.49

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	22.49	0	100.00
Total	22.49	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 71  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°57.71  
 start stop duration Lon E 15°41.20  
 TIME :10:13:20 10:24:13 10.9 (min) Purpose : 1  
 LOG : 6564.84 6565.41 0.6 Region : 6000  
 FDEPTH: 175 175 Gear cond.: 0  
 BDEPTH: 198 199 Validity : 0  
 Towing dir: 0° Wire out : 370 m Speed : 3.2 kn  
 Sorted : 0 Total catch: 0.46 Catch/hour: 2.53

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Maurollicus muelleri	2.53	0	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 72  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°57.74  
 start stop duration Lon E 15°40.52  
 TIME :10:24:50 10:31:05 6.3 (min) Purpose : 1  
 LOG : 6565.44 6565.70 0.3 Region : 6000  
 FDEPTH: 175 80 Gear cond.: 0  
 BDEPTH: 200 202 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 2.5 kn  
 Sorted : 0 Total catch: 0.12 Catch/hour: 1.15

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Maurollicus muelleri	1.15	0	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 73  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°4.14  
 start stop duration Lon E 15°22.27  
 TIME :13:03:06 13:13:06 10.0 (min) Purpose : 1  
 LOG : 6583.64 6584.19 0.6 Region : 6000  
 FDEPTH: 205 205 Gear cond.: 0  
 BDEPTH: 236 238 Validity : 0  
 Towing dir: 0° Wire out : 470 m Speed : 3.3 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
N O C A T C H	0.00	0	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 74  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°4.71  
 start stop duration Lon E 15°22.17  
 TIME :13:13:45 13:25:07 11.4 (min) Purpose : 1  
 LOG : 6584.22 6584.70 0.5 Region : 6000  
 FDEPTH: 205 34 Gear cond.: 0  
 BDEPTH: 238 240 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 2.6 kn  
 Sorted : 0 Total catch: 0.00 Catch/hour: 0.00

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
N O C A T C H	0.00	0	0.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 75  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°16.05  
 start stop duration Lon E 15°33.08  
 TIME :15:48:32 15:58:29 9.9 (min) Purpose : 1  
 LOG : 6599.38 6599.90 0.5 Region : 6000  
 FDEPTH: 222 222 Gear cond.: 0  
 BDEPTH: 250 250 Validity : 0  
 Towing dir: 0° Wire out : 460 m Speed : 3.1 kn  
 Sorted : 1 Total catch: 0.69 Catch/hour: 4.16

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Maurollicus muelleri	3.92	2852	94.20
Aequorea sp.	0.24	6	5.80
Total	4.16		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 76  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°16.45  
 start stop duration Lon E 15°33.52  
 TIME :15:59:10 16:08:49 9.7 (min) Purpose : 1  
 LOG : 6599.93 6600.30 0.4 Region : 6000  
 FDEPTH: 221 35 Gear cond.: 0  
 BDEPTH: 250 250 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 2.3 kn  
 Sorted : 5 Total catch: 5.04 Catch/hour: 31.30

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Maurollicus muelleri	31.30	22764	100.00
Total	31.30		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 77  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°12.84  
 start stop duration Lon E 15°45.37  
 TIME :18:02:54 18:12:35 9.7 (min) Purpose : 1  
 LOG : 6612.55 6613.04 0.5 Region : 6000  
 FDEPTH: 196 195 Gear cond.: 0  
 BDEPTH: 228 228 Validity : 0  
 Towing dir: 0° Wire out : 430 m Speed : 3.0 kn  
 Sorted : 11 Total catch: 11.38 Catch/hour: 70.44

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Maurollicus muelleri	39.81	29492	56.52
Aequorea sp.	27.06	0	38.41
Merluccius paradoxus	2.90	62	4.11
Sepia hieronis	0.30	43	0.42
Lepidopus caudatus	0.19	6	0.26
Sepia australis	0.08	6	0.11
Iniotheuthis capensis	0.06	25	0.08
Solenocera africana	0.03	12	0.04
Lolligoncula mercatoris	0.02	6	0.03
Gobius sp	0.00	6	0.00
Total	70.44		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 78  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°13.78  
 start stop duration Lon E 15°46.03  
 TIME :18:27:08 18:37:06 10.0 (min) Purpose : 1  
 LOG : 6613.66 6614.16 0.5 Region : 6000  
 FDEPTH: 55 50 Gear cond.: 0  
 BDEPTH: 228 229 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 3.0 kn  
 Sorted : 7 Total catch: 7.20 Catch/hour: 43.32

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Maurollicus muelleri	15.65	0	36.12
MYCTOPHIDAE	15.65	0	36.12
Aequorea sp.	10.23	0	23.62
Merluccius paradoxus	1.69	72	3.89
Sepia australis	0.11	12	0.25
Total	43.32		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 79  
 DATE :01.03.2009 GEAR TYPE: BT NO: 22 POSITION:Lat S 30°14.62  
 start stop duration Lon E 15°46.51  
 TIME :18:46:21 18:58:40 12.0 (min) Purpose : 1  
 LOG : 6614.64 6615.37 0.7 Region : 6000  
 FDEPTH: 28 25 Gear cond.: 0  
 BDEPTH: 227 228 Validity : 0  
 Towing dir: 0° Wire out : 70 m Speed : 3.8 kn  
 Sorted : 16 Total catch: 16.02 Catch/hour: 80.11

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Aequorea sp.	34.60	0	43.19
MYCTOPHIDAE	22.12	0	27.62
Maurollicus muelleri	22.12	0	27.62
Merluccius paradoxus	0.76	45	0.94
Todaropsis eblanae	0.31	20	0.39
Sepia australis	0.17	15	0.21
Lepidopus caudatus	0.03	10	0.04
Total	80.11		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 80  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.43  
 start stop duration Lon E 15°59.73  
 TIME :21:27:36 21:37:43 10.1 (min) Purpose : 1  
 LOG : 6632.71 6633.25 0.6 Region : 6000  
 FDEPTH: 170 165 Gear cond.: 0  
 BDEPTH: 200 200 Validity : 0  
 Towing dir: 0° Wire out : 365 m Speed : 3.2 kn  
 Sorted : 16 Total catch: 15.67 Catch/hour: 92.93

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Aequorea sp.	45.65	0	49.13
Maurollicus muelleri	42.69	0	45.94
Merluccius paradoxus	2.88	95	3.09
Sepia australis	1.33	77	1.44
Sepia hieronis	0.34	6	0.37
Iniotheuthis capensis	0.04	18	0.04
Total	92.93		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 81  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°5.97  
 start stop duration Lon E 15°58.60  
 TIME :21:49:09 21:59:16 10.1 (min) Purpose : 1  
 LOG : 6633.80 6634.33 0.5 Region : 6000  
 FDEPTH: 100 55 Gear cond.: 0  
 BDEPTH: 199 200 Validity : 0  
 Towing dir: 0° Wire out : 110 m Speed : 3.1 kn  
 Sorted : 20 Total catch: 19.54 Catch/hour: 115.83

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Maurollicus muelleri	75.89	0	65.52
Aequorea sp.	37.94	0	32.76
Merluccius paradoxus	1.40	95	1.21
Sepia australis	0.60	59	0.52
Total	115.83		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 82  
 DATE :01.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°5.54  
 start stop duration Lon E 15°57.55  
 TIME :22:07:40 22:17:06 9.4 (min) Purpose : 1  
 LOG : 6634.82 6635.40 0.6 Region : 6000  
 FDEPTH: 30 30 Gear cond.: 0  
 BDEPTH: 201 201 Validity : 0  
 Towing dir: 0° Wire out : 60 m Speed : 3.7 kn  
 Sorted : 20 Total catch: 19.89 Catch/hour: 126.41

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Maurollicus muelleri	77.54	193856	61.34
Aequorea sp.	41.31	0	32.68
Merluccius paradoxus	4.06	674	3.21
Sepia australis	3.27	222	2.59
Todaropsis eblanae	0.14	13	0.11
Trichiurus lepturus	0.08	13	0.07
Total	126.41		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 83  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.49  
 start stop duration Lon E 15°59.86  
 TIME :01:41:51 01:51:46 9.9 (min) Purpose : 1  
 LOG : 6646.30 6646.85 0.6 Region : 6000  
 FDEPTH: 167 166 Gear cond.: 0  
 BDEPTH: 201 200 Validity : 0  
 Towing dir: 0° Wire out : 390 m Speed : 3.3 kn  
 Sorted : 19 Total catch: 19.28 Catch/hour: 116.73

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
weight	numbers		
Aequorea sp.	64.18	0	54.98
Maurollicus muelleri	48.44	3475	41.49
Merluccius paradoxus	2.91	103	2.49
Sepia australis	1.10	67	0.94
Todaropsis eblanae	0.11	6	0.09
Total	116.73		100.00

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 84  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.03  
 start stop duration Lon E 15°58.81  
 TIME :02:01:34 02:11:35 10.0 (min) Purpose : 1  
 LOG : 6647.33 6647.91 0.6 Region : 6000  
 FDEPTH: 78 78 Gear cond.: 0  
 BDEPTH: 200 201 Validity : 0  
 Towing dir: 0° Wire out : 182 m Speed : 3.4 kn  
 Sorted : 20 Total catch: 19.75 Catch/hour: 118.27

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 91  
 DATE :02.03.2009 GEAR TYPE: BT NO: 22 POSITION:Lat S 30°5.89  
 start stop duration Lon E 15°59.46  
 TIME :14:51:19 15:01:09 9.8 (min) Purpose : 1  
 LOG : 6687.54 6688.00 0.5 Region : 6000  
 FDEPTH: 200 199 Gear cond.: 0  
 BDEPTH: 200 199 Validity : 0  
 Towing dir: 0° Wire out : 500 m Speed : 2.8 kn  
 Sorted : 167 Total catch: 166.91 Catch/hour: 1017.77

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	76.65 0	64.81	
Maurollicus muelleri	40.12 133731	33.92	
Merluccius paradoxus	1.44 90	1.22	57
Sepia australis	0.05 6	0.04	
Iniotheuthis capensis	0.01 6	0.01	
Helicolenus dactylopterus	0.01 90	0.01	
Total	118.27	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Merluccius paradoxus	457.32 8177	44.93	62
Aequorea sp.	103.66 0	10.18	
Lophius vomerinus	91.46 73	8.99	65
Merluccius paradoxus	60.98 3317	5.99	69
Maurollicus muelleri	53.66 38329	5.27	
Brama brama	45.73 24	4.49	60
Etrumeus whiteheadi	37.20 549	3.65	
Merluccius capensis	32.32 49	3.18	63
Merluccius capensis	30.49 177	3.00	68
Sepia australis	29.15 1622	2.86	
Helicolenus dactylopterus	25.61 628	2.52	64
Todaropsis eblanae	14.09 518	1.38	67
Paracallionymus costatus	13.41 1116	1.32	
Chelidonichthys capensis	9.15 24	0.90	66
Caelorhynchus simorhynchus	4.82 104	0.47	
Cynoglossus sanzibarensis	3.84 91	0.38	61
Holohalaelurus regani	3.05 24	0.30	
Anemones, pink	0.70 18	0.07	
Black sand dollar	0.52 24	0.05	0
Black sand dollar	0.48 6	0.05	
Pterygoquilla armata capensis	0.16 30	0.02	
Total	1017.77	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 85  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°5.26  
 start stop duration Lon E 15°57.24  
 TIME :02:29:45 02:39:33 9.8 (min) Purpose : 1  
 LOG : 6648.91 6649.53 0.6 Region : 6000  
 FDEPTH: 30 30 Gear cond.: 0  
 BDEPTH: 202 202 Validity : 0  
 Towing dir: 0° Wire out : 70 m Speed : 3.8 kn  
 Sorted : 18 Total catch: 17.68 Catch/hour: 108.23

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 92  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.67  
 start stop duration Lon E 16°0.86  
 TIME :18:53:06 19:03:17 10.2 (min) Purpose : 1  
 LOG : 6695.92 6696.48 0.6 Region : 6000  
 FDEPTH: 170 175 Gear cond.: 0  
 BDEPTH: 200 200 Validity : 0  
 Towing dir: 0° Wire out : 365 m Speed : 3.3 kn  
 Sorted : 6 Total catch: 6.48 Catch/hour: 38.17

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Maurollicus muelleri	89.39 0	82.59	
Aequorea sp.	10.41 0	9.62	
Merluccius paradoxus	5.98 784	5.52	58
Sepia australis	1.90 116	1.76	
Todaropsis eblanae	0.34 24	0.31	59
Trichiurus lepturus	0.21 24	0.19	
Iniotheuthis capensis	0.01 6	0.01	
Total	108.23	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Maurollicus muelleri	14.73 11334	38.60	
Aequorea sp.	13.32 0	34.89	
Sepia australis	5.30 277	13.90	
Merluccius paradoxus	4.51 253	11.83	70
Todaropsis eblanae	0.25 6	0.66	84
Lolligoncula mercatoris	0.03 12	0.08	
Iniotheuthis capensis	0.02 6	0.05	
Total	38.17	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 86  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.12  
 start stop duration Lon E 15°59.94  
 TIME :05:33:31 05:43:33 10.0 (min) Purpose : 1  
 LOG : 6658.57 6659.11 0.5 Region : 6000  
 FDEPTH: 170 172 Gear cond.: 0  
 BDEPTH: 200 199 Validity : 0  
 Towing dir: 0° Wire out : 370 m Speed : 3.2 kn  
 Sorted : 49 Total catch: 49.32 Catch/hour: 295.33

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 93  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.29  
 start stop duration Lon E 15°59.84  
 TIME :19:12:02 19:22:20 10.3 (min) Purpose : 1  
 LOG : 6696.90 6697.51 0.6 Region : 6000  
 FDEPTH: 57 52 Gear cond.: 0  
 BDEPTH: 200 200 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 3.6 kn  
 Sorted : 14 Total catch: 13.74 Catch/hour: 80.03

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Maurollicus muelleri	119.76 0	40.55	
Lampanyctodes hectoris	119.76 0	40.55	
Etrumeus whiteheadi	50.30 0	17.03	
Aequorea sp.	5.51 0	1.87	
Total	295.33	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Maurollicus muelleri	14.73 11334	38.60	
Aequorea sp.	13.32 0	34.89	
Sepia australis	5.30 277	13.90	
Merluccius paradoxus	4.51 253	11.83	70
Todaropsis eblanae	0.25 6	0.66	84
Lolligoncula mercatoris	0.03 12	0.08	
Iniotheuthis capensis	0.02 6	0.05	
Total	38.17	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 87  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°5.65  
 start stop duration Lon E 15°59.00  
 TIME :05:51:29 05:58:30 7.0 (min) Purpose : 1  
 LOG : 6659.51 6659.89 0.4 Region : 6000  
 FDEPTH: 145 140 Gear cond.: 0  
 BDEPTH: 200 200 Validity : 0  
 Towing dir: 0° Wire out : 300 m Speed : 3.2 kn  
 Sorted : 32 Total catch: 31.80 Catch/hour: 271.79

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 94  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.06  
 start stop duration Lon E 15°59.04  
 TIME :19:24:39 19:37:08 12.5 (min) Purpose : 1  
 LOG : 6697.63 6698.38 0.8 Region : 6000  
 FDEPTH: 40 33 Gear cond.: 0  
 BDEPTH: 200 200 Validity : 0  
 Towing dir: 0° Wire out : 65 m Speed : 3.6 kn  
 Sorted : 38 Total catch: 38.46 Catch/hour: 184.74

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Lampanyctodes hectoris	119.66 0	44.03	
Maurollicus muelleri	119.66 0	44.03	
Aequorea sp.	32.48 0	11.95	
Total	271.79	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	61.75 0	77.15	
Maurollicus muelleri	17.48 58252	21.84	
Merluccius paradoxus	0.43 41	0.54	71
Sepia australis	0.34 29	0.43	
Iniotheuthis capensis	0.03 17	0.04	
Total	80.03	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 88  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°5.29  
 start stop duration Lon E 15°58.41  
 TIME :06:02:36 06:18:04 15.5 (min) Purpose : 1  
 LOG : 6660.13 6660.94 0.8 Region : 6000  
 FDEPTH: 125 58 Gear cond.: 0  
 BDEPTH: 200 201 Validity : 0  
 Towing dir: 0° Wire out : 130 m Speed : 3.1 kn  
 Sorted : 44 Total catch: 44.25 Catch/hour: 171.62

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 95  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.30  
 start stop duration Lon E 15°58.38  
 TIME :22:23:00 22:32:51 9.9 (min) Purpose : 1  
 LOG : 6706.07 6706.61 0.5 Region : 6000  
 FDEPTH: 168 170 Gear cond.: 0  
 BDEPTH: 200 201 Validity : 0  
 Towing dir: 0° Wire out : 390 m Speed : 3.3 kn  
 Sorted : 13 Total catch: 13.17 Catch/hour: 80.24

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Maurollicus muelleri	77.57 0	45.20	
Aequorea sp.	74.66 0	43.50	
Lampanyctodes hectoris	19.39 0	11.30	
Total	171.62	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	105.68 0	57.21	
Maurollicus muelleri	76.38 381906	41.35	
Merluccius paradoxus	2.39 279	1.29	72
Sepia australis	0.28 19	0.15	
Total	184.74	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 89  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.45  
 start stop duration Lon E 15°59.74  
 TIME :13:45:54 13:55:48 9.9 (min) Purpose : 1  
 LOG : 6684.46 6685.03 0.6 Region : 6000  
 FDEPTH: 165 165 Gear cond.: 0  
 BDEPTH: 200 199 Validity : 0  
 Towing dir: 0° Wire out : 390 m Speed : 3.4 kn  
 Sorted : 4 Total catch: 3.61 Catch/hour: 21.90

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 96  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.21  
 start stop duration Lon E 15°59.12  
 TIME :13:56:32 14:07:13 10.7 (min) Purpose : 1  
 LOG : 6685.06 6685.58 0.5 Region : 6000  
 FDEPTH: 161 32 Gear cond.: 0  
 BDEPTH: 200 200 Validity : 0  
 Towing dir: 0° Wire out : 72 m Speed : 2.9 kn  
 Sorted : 11 Total catch: 11.40 Catch/hour: 63.99

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Maurollicus muelleri	17.90 13256	81.72	
Aequorea sp.	4.00 12	18.28	
Total	21.90	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	52.39 0	65.29	
Maurollicus muelleri	21.32 19383	26.57	
Lophius vomerinus	2.68 6	3.34	74
Sepia australis	2.18 128	2.72	
Merluccius paradoxus	1.51 67	1.88	73
Sepia hieronis	0.13 24	0.17	
Iniotheuthis capensis	0.02 12	0.03	
Total	80.24	100.00	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 90  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.21  
 start stop duration Lon E 15°59.12  
 TIME :13:56:32 14:07:13 10.7 (min) Purpose : 1  
 LOG : 6685.06 6685.58 0.5 Region : 6000  
 FDEPTH: 161 32 Gear cond.: 0  
 BDEPTH: 200 200 Validity : 0  
 Towing dir: 0° Wire out : 72 m Speed : 2.9 kn  
 Sorted : 11 Total catch: 11.40 Catch/hour: 63.99

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 97  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.06  
 start stop duration Lon E 15°59.04  
 TIME :19:24:39 19:37:08 12.5 (min) Purpose : 1  
 LOG : 6697.63 6698.38 0.8 Region : 6000  
 FDEPTH: 40 33 Gear cond.: 0  
 BDEPTH: 200 200 Validity : 0  
 Towing dir: 0° Wire out : 65 m Speed : 3.6 kn  
 Sorted : 38 Total catch: 38.46 Catch/hour: 184.74

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	62.30 146	97.37	
Maurollicus muelleri	1.68 1094	2.63	
Total	63.99	100.00	

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	52.39 0	65.29	
Maurollicus muelleri	21.32 19383	26.57	
Lophius vomerinus	2.68 6	3.34	74
Sepia australis	2.18 128	2.72	
Merluccius paradoxus	1.51 67	1.88	73
Sepia hieronis	0.13 24	0.17	
Iniotheuthis capensis	0.02 12	0.03	
Total	80.24	100.00	



R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 96  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°5.96  
 start stop duration Lon E 15°57.22  
 TIME :22:43:12 22:53:08 9.9 (min) Purpose : 1  
 LOG : 6707.12 6707.70 0.6 Region : 6000  
 FDEPTH: 68 68 Gear cond.: 0  
 BDEPTH: 201 202 Validity : 0  
 Towing dir: 0° Wire out : 170 m Speed : 3.5 kn  
 Sorted : 10 Total catch: 10.20 Catch/hour: 61.62

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	48.34	0	78.45
Maurollicus muelleri	12.69	25378	20.59
Sepia australis	0.29	30	0.47
Merluccius paradoxus	0.28	54	0.46
Inioteuthis capensis	0.01	6	0.02
Loligo reynaudi	0.01	6	0.01
<b>Total</b>	<b>61.62</b>	<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 97  
 DATE :02.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°5.58  
 start stop duration Lon E 15°56.22  
 TIME :22:59:59 23:10:33 10.6 (min) Purpose : 1  
 LOG : 6708.07 6708.68 0.6 Region : 6000  
 FDEPTH: 29 26 Gear cond.: 0  
 BDEPTH: 202 202 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.5 kn  
 Sorted : 8 Total catch: 8.31 Catch/hour: 47.14

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	29.52	0	62.61
Lampanyctodes hectoris	11.35	18920	24.08
Maurollicus muelleri	4.54	15139	9.63
Sepia australis	1.00	68	2.12
Merluccius paradoxus	0.36	68	0.76
Etrumeus whiteheadi	0.36	6	0.76
Todaropsis eblanae	0.02	6	0.04
<b>Total</b>	<b>47.14</b>	<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 98  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.48  
 start stop duration Lon E 15°59.74  
 TIME :01:36:52 01:46:39 9.8 (min) Purpose : 1  
 LOG : 6717.09 6717.64 0.6 Region : 6000  
 FDEPTH: 165 165 Gear cond.: 0  
 BDEPTH: 200 200 Validity : 0  
 Towing dir: 0° Wire out : 390 m Speed : 3.3 kn  
 Sorted : 15 Total catch: 15.15 Catch/hour: 92.87

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	45.35	0	48.84
Maurollicus muelleri	43.51	31079	46.86
Merluccius paradoxus	2.20	662	2.37
Sepia australis	1.79	104	1.93
Sepia hieronis	0.01	6	0.01
<b>Total</b>	<b>92.87</b>	<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 99  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°6.04  
 start stop duration Lon E 15°58.58  
 TIME :01:57:57 02:07:49 9.9 (min) Purpose : 1  
 LOG : 6718.19 6718.75 0.6 Region : 6000  
 FDEPTH: 68 70 Gear cond.: 0  
 BDEPTH: 200 201 Validity : 0  
 Towing dir: 0° Wire out : 170 m Speed : 3.4 kn  
 Sorted : 10 Total catch: 10.34 Catch/hour: 62.95

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	52.94	0	84.11
Maurollicus muelleri	5.35	7649	8.51
Chelidonichthys capensis	1.72	6	2.73
Lampanyctodes hectoris	1.34	895	2.13
Merluccius paradoxus	0.99	128	1.58
Sepia australis	0.55	37	0.87
Todaropsis eblanae	0.04	6	0.07
Inioteuthis capensis	0.01	6	0.02
<b>Total</b>	<b>62.95</b>	<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 100  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°5.62  
 start stop duration Lon E 15°57.57  
 TIME :02:15:58 02:25:25 9.4 (min) Purpose : 1  
 LOG : 6719.17 6719.79 0.6 Region : 6000  
 FDEPTH: 33 30 Gear cond.: 0  
 BDEPTH: 201 202 Validity : 0  
 Towing dir: 0° Wire out : 73 m Speed : 3.9 kn  
 Sorted : 23 Total catch: 22.66 Catch/hour: 143.86

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Lampanyctodes hectoris	76.38	130667	53.09
Maurollicus muelleri	46.79	209708	32.53
Aequorea sp.	19.05	0	13.24
Sepia australis	0.63	70	0.44
Todaropsis eblanae	0.53	38	0.37
Merluccius paradoxus	0.32	70	0.22
Lepidopus caudatus	0.15	25	0.10
Inioteuthis capensis	0.01	6	0.01
<b>Total</b>	<b>143.86</b>	<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 101  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°0.87  
 start stop duration Lon E 16°17.78  
 TIME :09:05:54 09:17:04 11.2 (min) Purpose : 1  
 LOG : 6751.32 6751.90 0.6 Region : 6000  
 FDEPTH: 160 150 Gear cond.: 0  
 BDEPTH: 188 189 Validity : 0  
 Towing dir: 0° Wire out : 340 m Speed : 3.1 kn  
 Sorted : 21 Total catch: 20.75 Catch/hour: 111.46

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	111.46	0	100.00
<b>Total</b>	<b>111.46</b>	<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 102  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 30°0.28  
 start stop duration Lon E 16°17.55  
 TIME :09:17:52 09:28:34 10.7 (min) Purpose : 1  
 LOG : 6751.94 6752.42 0.5 Region : 6000  
 FDEPTH: 157 75 Gear cond.: 0  
 BDEPTH: 182 188 Validity : 0  
 Towing dir: 0° Wire out : 0 m Speed : 2.7 kn  
 Sorted : 16 Total catch: 16.40 Catch/hour: 91.96

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	91.96	0	100.00
<b>Total</b>	<b>91.96</b>	<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 103  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°59.73  
 start stop duration Lon E 16°17.31  
 TIME :09:30:28 09:40:24 9.9 (min) Purpose : 1  
 LOG : 6752.52 6753.08 0.6 Region : 6000  
 FDEPTH: 60 40 Gear cond.: 0  
 BDEPTH: 188 182 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 3.4 kn  
 Sorted : 4 Total catch: 3.85 Catch/hour: 23.29

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	23.29	0	99.97
Trachurus trachurus	0.00	6	0.00
<b>Total</b>	<b>23.29</b>	<b>99.98</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 103  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°59.73  
 start stop duration Lon E 16°17.31  
 TIME :09:30:28 09:40:24 9.9 (min) Purpose : 1  
 LOG : 6752.52 6753.08 0.6 Region : 6000  
 FDEPTH: 60 40 Gear cond.: 0  
 BDEPTH: 188 182 Validity : 0  
 Towing dir: 0° Wire out : 100 m Speed : 3.4 kn  
 Sorted : 4 Total catch: 3.85 Catch/hour: 23.29

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	23.29	0	99.97
Trachurus trachurus	0.00	6	0.00
<b>Total</b>	<b>23.29</b>	<b>99.98</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 104  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°54.74  
 start stop duration Lon E 16°37.90  
 TIME :12:39:15 12:49:33 10.3 (min) Purpose : 1  
 LOG : 6776.07 6776.58 0.5 Region : 6000  
 FDEPTH: 126 130 Gear cond.: 0  
 BDEPTH: 162 162 Validity : 0  
 Towing dir: 0° Wire out : 280 m Speed : 3.0 kn  
 Sorted : 12 Total catch: 12.46 Catch/hour: 72.59

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Lampanyctodes hectoris	24.47	20901	33.70
Maurollicus muelleri	23.88	28008	32.90
Aequorea sp.	23.59	0	32.50
Merluccius paradoxus	0.36	6	0.50
Sepia australis	0.29	6	0.40
<b>Total</b>	<b>72.59</b>	<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 105  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°54.13  
 start stop duration Lon E 16°37.40  
 TIME :12:55:07 13:05:03 9.9 (min) Purpose : 1  
 LOG : 6776.81 6777.33 0.5 Region : 6000  
 FDEPTH: 72 69 Gear cond.: 0  
 BDEPTH: 162 163 Validity : 0  
 Towing dir: 0° Wire out : 140 m Speed : 3.1 kn  
 Sorted : 400 Total catch: 399.99 Catch/hour: 2416.86

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Maurollicus muelleri	2347.19	2933988	97.12
Aequorea sp.	69.67	187	2.88
<b>Total</b>	<b>2416.86</b>	<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 106  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°53.49  
 start stop duration Lon E 16°36.85  
 TIME :13:10:47 13:21:19 10.5 (min) Purpose : 1  
 LOG : 6777.60 6778.23 0.6 Region : 6000  
 FDEPTH: 32 29 Gear cond.: 0  
 BDEPTH: 163 163 Validity : 0  
 Towing dir: 0° Wire out : 50 m Speed : 3.6 kn  
 Sorted : 12 Total catch: 11.88 Catch/hour: 67.61

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	66.89	0	98.93
Maurollicus muelleri	0.38	381	0.56
Lolliguncula mercatoris	0.26	125	0.39
Lampanyctodes hectoris	0.04	34	0.06
Engraulis encrasicolus	0.04	6	0.06
<b>Total</b>	<b>67.61</b>	<b>100.00</b>	

R/V Dr. Fridtjof Nansen SURVEY:2009402 STATION: 107  
 DATE :03.03.2009 GEAR TYPE: PT NO: 1 POSITION:Lat S 29°48.45  
 start stop duration Lon E 16°59.19  
 TIME :16:47:34 16:57:34 10.0 (min) Purpose : 1  
 LOG : 6802.00 6802.54 0.5 Region : 6000  
 FDEPTH: 74 74 Gear cond.: 0  
 BDEPTH: 106 106 Validity : 0  
 Towing dir: 0° Wire out : 150 m Speed : 3.2 kn  
 Sorted : 6 Total catch: 5.68 Catch/hour: 34.08

SPECIES	CATCH/HOUR	% OF TOT. C	SAMP
	weight numbers		
Aequorea sp.	34.08	0	100.00
<b>Total</b>	<b>34.08</b>	<b>100.00</b>	

